FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

Member

MARCH, 1945

Vol. 98, No. 3

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A Hero in the Making
(See Page 196)

A CASE - SHEPPERD - MANN PUBLICATION

In Stubborn Asphyxia Cases—

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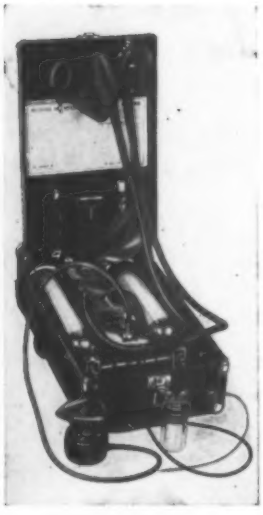
RESUSCITATORS—



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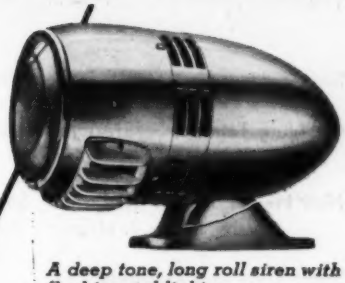
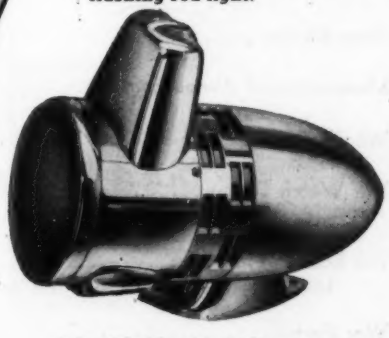


A deep tone, long roll siren with flashing red light.



A Traffik-King Model "coaster" siren with oscillating red light.

ARMY E NAVY

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FEDERAL ELECTRIC CO., INC.

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FIRE ENGINEERING

A Consolidation of Fire and Water Engineering, The Fire Engineer and Fire Protection

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FRED SHEPPERD
Editor

ROI B. WOOLLEY
Assistant Editor

The Ubiquitous Postscript

SOMEBODY once said that the postscript was the most important part of a woman's letter. Our own experience suggests that its importance is not limited to the fair sex.

● Looking over the tide of correspondence that crosses our editors' desks in the course of the day, we are struck by the similarity between so many of the letters from readers. That is the almost universal habit of tacking on a postscript in which they say such things as "I sure do appreciate my FIRE ENGINEERING" . . . "I get a lot of good out of your journal" . . . "Your magazine is tops —keep up the good work," and so on.

● What is particularly gratifying is the fact that so many readers take pains to mention the good they derive from the *advertising* as well as the *editorial* sections of each issue.

● This speaks well for the companies that strive to make their messages in FIRE ENGINEERING timely, informative and interesting as well as for the quality of publishing leadership which refuses to accept advertising of questionable ethics.

The Publishers

FIRE ENGINEERING

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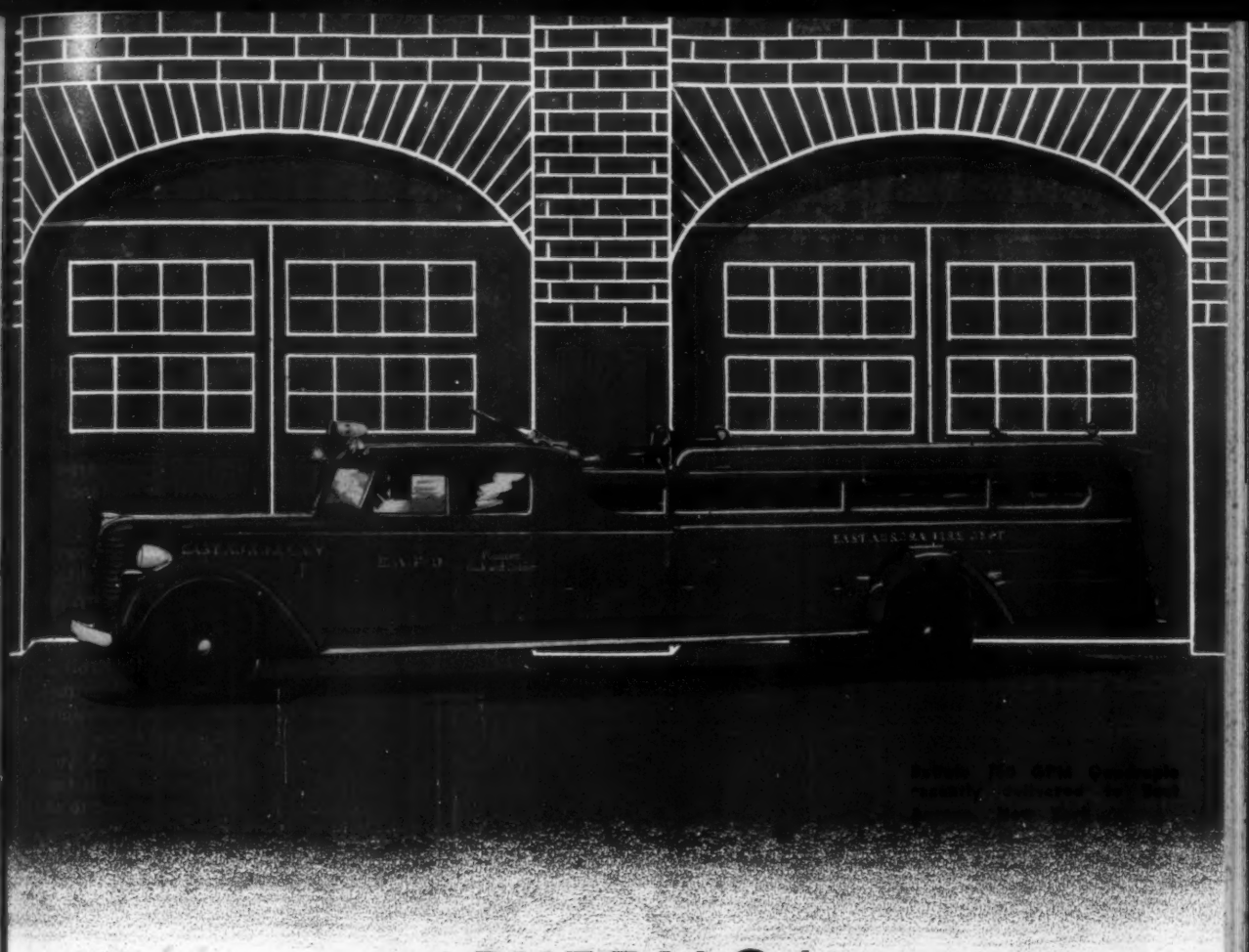

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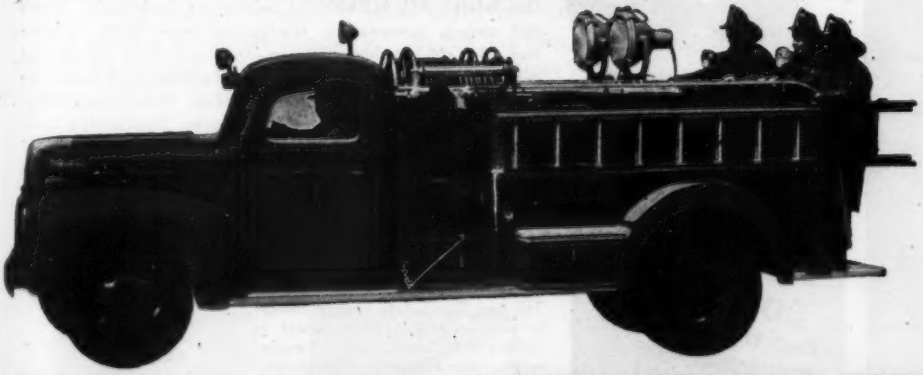

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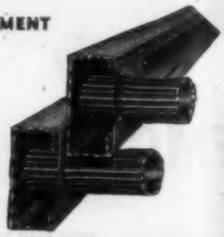

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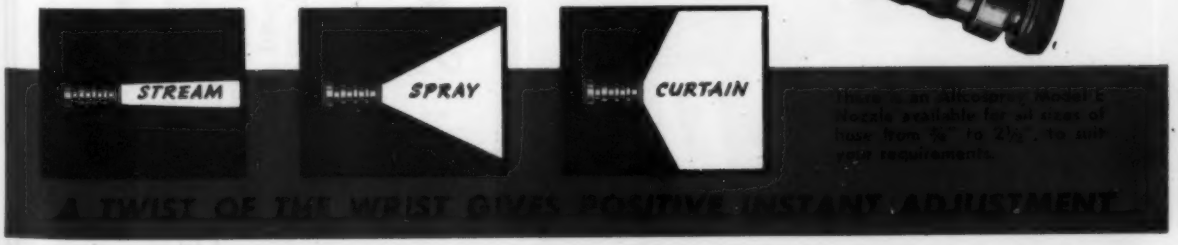

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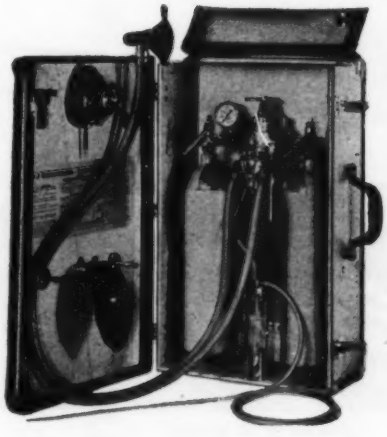

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The long record of successful experience with the E & J the country over invariably earns it first choice wherever merit is the determining factor.

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WaterFOG is used extensively by the New Haven fire department for oil, electrical and other types of fires. Adequate WaterFOG equipment and thorough training by Chief Heinz in the use of this modern method of fire fighting made possible quick extinguishment of this fire.

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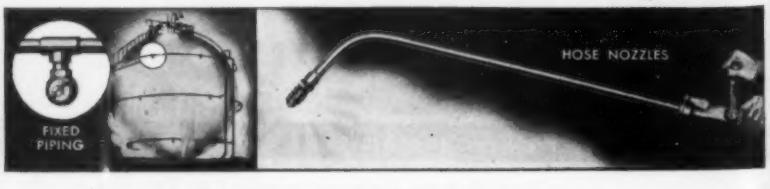
Fire out in 40 minutes

Water Engineered by Rockwood Cools, Confines, Smothers Oil Fires

ARMY E NAVY

ROCKWOOD WaterFOG



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She must have the best of fire-fighting equipment to safeguard her progress.

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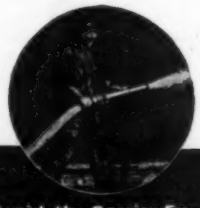

In the recent Marshall Island raid, the Carrier Enterprise was hit by a Jap bomb firing both flight and hangar decks. Hightest gasoline blazed furiously. The ship's fire-fighting crew went into action with National Foam—in One Minute the fire was out.

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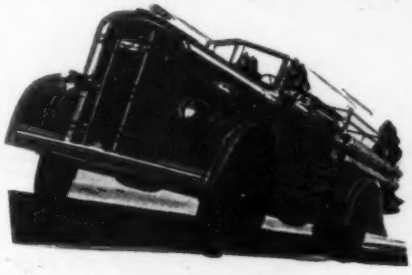

*Some models not available until after Victory because of W.P.B. limitation orders.

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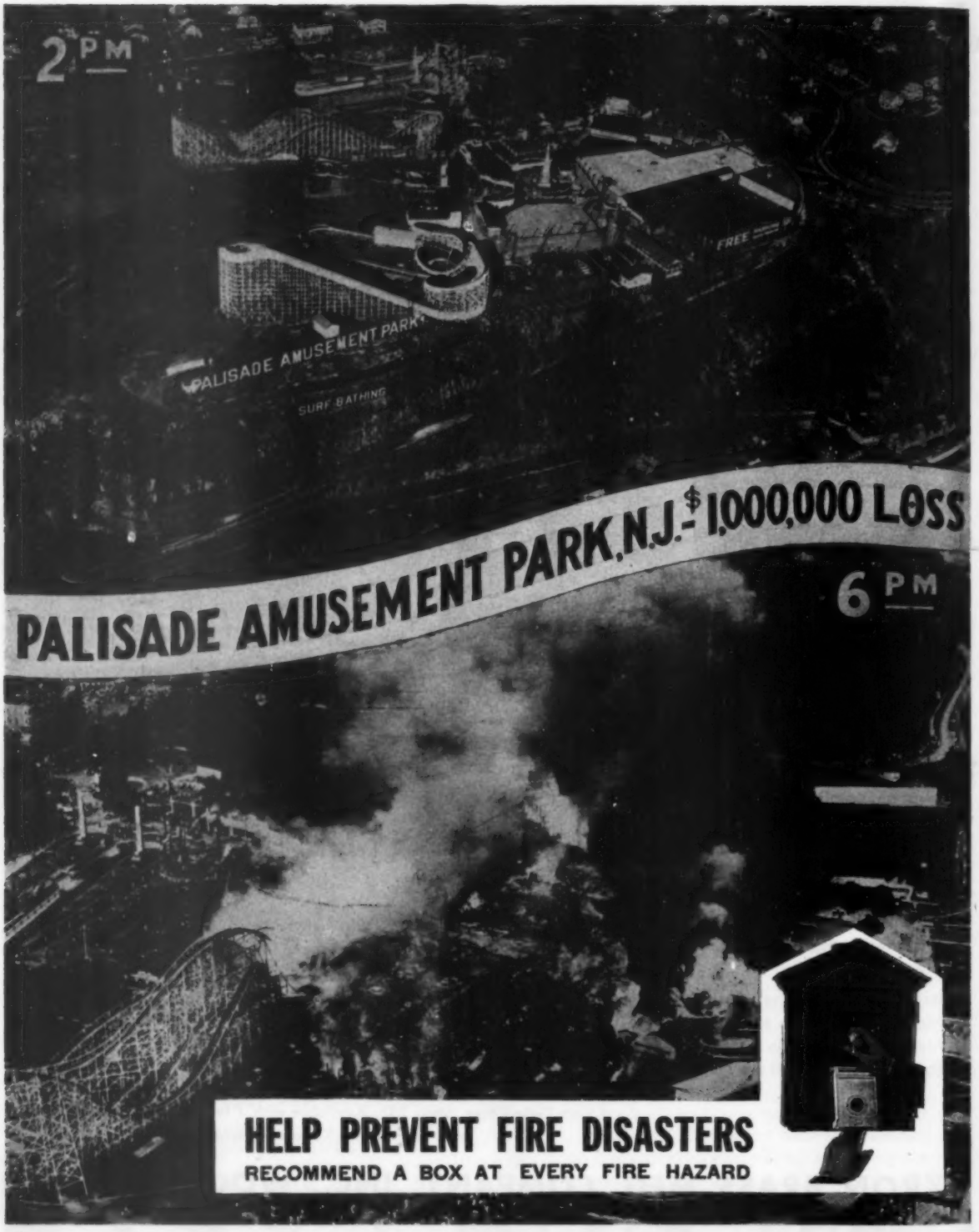
Rocker or pin lug swivel. Rocker shaped legs on base to protect threads and to aid in connecting or disconnecting hose lines.

Shown above is an assembly of Style 248 Siamese Connection with Akron Gate Valve, Style 285. Available with 1 female and 2 male, or 2 female and 1 male threads.

AKRON BRASS MFG. COMPANY, INC., WOOSTER, OHIO

AKRON BRASS

FIRE FIGHTING EQUIPMENT



THE GAMEWELL COMPANY
Newton Upper Falls, Massachusetts

FIRE ENGINEERING

MARCH, 1945 VOL. 98. NO. 3

With the Editor

"Five and Ten" Store Fires The "five and ten cent" stores continue to suffer their quota of fires. Many have been completely destroyed by fire during the past year.

Fortunately none has involved heavy loss of life although a large number of firemen were incapacitated temporarily as a result of operating at these fires. As the predominating type of large dime store is a two-floor establishment, occupying the basement and ground floors, or the ground and second floors, and with satisfactory means of egress only from the ground floor, it is indeed fortunate that a greater loss of life has not occurred.

Large open areas, counters and shelves stocked with inflammable goods, absence of automatic sprinklers, and the presence of crowds of shoppers of all ages seem to set the stage for a holocaust. Usually but two stairways are provided between the ground floor and basement, or ground floor and second floor, one being located at the front and the other at the rear of the building. Both stairways are open. A flash fire would quickly cut-off both stairways.

Because of the absence of means by which a fire department might readily attack and advance on the fire on the less accessible floor, this type of fire is particularly hard to control. In operating on such a fire in New York recently, one fireman lost his life and a dozen others were knocked out.

While ordinances in some cities require the installation of sprinklers where a basement is used for storage, store officials have successfully contended that merchandise on shelves and on counters does not constitute "storage." As a result, only a small part of the basement, that actually used for storage, has secured sprinkler protection.

With the growing use of plastics and other new materials in the manufacture of wares merchandised in these stores, fire hazards may be expected to increase in these establishments. Protective measures must be taken. Some of these might include:

First, persistent and frequent inspections to maintain "housekeeping" at a high level.

Second, wide aisles leading directly to stairways.

Third, cooking and heating facilities segregated and safeguarded against fire.

Fourth, "No Smoking" rules properly enforced.

Fifth, sprinklers should be urged, where no ordinances exist requiring their installation.

Fred Sheppard

Coast Guard Conducts Tests on Engine Room Fires—Part II

Carbon Dioxide and Fog Employed in Instructive Series of Demonstrations; New Theories on Fire Extinguishment Indicated

THIS is the second installment of an article describing fire extinguishing tests made on the Liberty Ship "Gaspar de Portola" at For McHenry, Md., by the Coast Guard under direction of Commander Lloyd Layman.

The first installment, which appeared in the February issue, reviewed the scope and purpose of the tests, and outlined the procedure followed; it also included reports of the first four tests. The article resumes the review of individual tests.

Test No. 5

I. TIME—

23 October, 1944.

II. PURPOSES—

1. To determine the effectiveness of the carbon dioxide extinguishing system under the following conditions:

a. During a major fire involving fuel oil under the floor plates.

b. With the ventilators and other air intake openings uncovered.

c. Release of the carbon dioxide within a predetermined period of time (ten minutes) after the temperature within the engine room had reached the degree of temperature that would be present under normal operating conditions.

2. A secondary purpose was to determine if a major fire involving fuel oil under the floor plates could be extinguished by the control of air flows and the use of water fog.

III. CONDITIONS BEFORE TEST—

1. The engineroom remained the same as reported after Test Fire No. 4 with the following exceptions:

a. Both boiler foundation spaces used in previous tests as fuel oil containers were covered.

b. Five thousand gallons of bunker "A" fuel oil were placed in the bilge of the engineroom. Because of a starboard list, it was necessary to add approximately ten thousand gallons of water to obtain maximum coverage without raising the oil above the floor plates. This provided an oil depth of approximately four and one-half inches and brought the oil level to within one inch of the floor plates on the starboard side. Full coverage of the bilge was obtained with the exception of about one hundred and fifty square feet at the farward port corner.

2. Two 2½ inch hose lines were laid from a 500 gallon skid pump unit, located on the pier, to the main deck to supply the 1½ inch hose lines equipped with all-purpose nozzles. Two 1½ inch lines were placed down the forward escape hatch to the shaft tunnel. Two 1½ inch lines were laid to the main engine room entrance. Two 1½ inch lines were laid to the starboard passage door of the engine room on the main deck.

3. An electronic pyrometer for determining the degree of heat at various locations in the engine room had been installed in a cabin on the main deck. Eleven thermocouple terminals had been placed in the engine room so that the degree of heat, at levels from three feet above the floor plates up to one foot from the top of the stack and at all overheads inside the space, could be obtained. In the Test Record which follows, reference is made to the thermocouples at the following locations:

No. 1—Projecting downward one foot into engine room space from second deck port side passage, sixteen feet aft of forward engine room bulkhead and fourteen feet inboard from port side shell plating.

No. 5—Projecting downward one foot into engine room space from carbon dioxide compartment, port side second deck, four feet forward of storeroom and workshop bulkhead and six feet inboard from port side shell plating.

No. 6—Projecting downward one foot into engine room space from second deck, above electrical equipment platform, five feet forward of aft engine room bulkhead and seven feet inboard side shell plating.

No. 15—Three feet above floor plates and ten feet forward of shaft tunnel entrance.

IV. TEST RECORD—

1. At 1331, the oil in the engine room was ignited at six different locations. Gasoline was used to prime the oil. Smoke banked down quickly from the overhead. The two priming parties were forced to withdraw from the engine room immediately following the ignition of the oil.

2. From the topside, it was noted that almost immediately after ignition, black smoke started to come from the stack casing and open skylights. During the following five minutes, the smoke coming from these openings was very black and in large volume.

3. At 1338, the smoke was changing to dark gray and diminishing in volume. At this time, the average temperature at the overheads in the engine

Official U. S. Coast Guard Photo

Recording Test Data

room was over 200° F. and near the floor place level under 100° F.

4. During the following ten minutes, the emitting smoke continued to diminish in volume and changed from dark to light gray.

5. At 1348, the carbon dioxide was released. At this time, the temperature in the engine room ranged from 255° F. near the floor plates to 1065° F. at the port side overhead. The average temperature was 530° F.

6. At 1351, three minutes following the release of carbon dioxide, the highest temperature was 785° F. at thermocouple No. 5. The average temperature was 461 degrees, a decrease of 69 degrees. During these three minutes, dense white vapors in large volume were emitting from the stack casing. During the next few minutes, the emitting vapors decreased in volume and changed to light gray.

7. At 1355, seven minutes after the carbon dioxide was released, the temperature at thermocouple No. 5 was 1070°F. The average temperature was 550° F., an increase of 20 degrees over that present when the carbon dioxide was released.

8. At 1401, thirty minutes after start of test, covering of air intake openings was started. The skylight housing and the aft port ventilator were cooled with water fog to permit covering operations. At 1415, the covering of air intake openings was completed.

9. At 1418, forty-seven minutes after start of test, the main door to the engine room was opened and high velocity water fog was applied from two 1½ inch all-purpose nozzles. At 1417, the highest temperature at thermocouple No. 5, 1325° F. The average temperature was 774 degrees. At 1447, the starboard passage door on the main deck was opened and high-velocity water fog was applied from one 1½ inch all-purpose nozzle.

10. At 1505, the cover was removed from the skylight. At this time, forty-seven minutes after the application of water fog was started, the average temperature had decreased from 774 to 271 degrees.

11. At 1514, water fog application was discontinued and the removal of covers from main ventilators was started. From 1505, when the cover was removed from the skylight until 1513 the average temperature increased from 271 to 344 degrees. At 1519, all main ventilators had been uncovered.

12. At 1515, two fire-fighting parties, each consisting of two men, entered the engine room from the shaft tunnel. Each fire-fighting party was provided with a 1½ inch hose line equipped with an all-purpose nozzle. They attempted to extinguish the fire using high velocity fog. Due to the volume of air entering through the open ventilators, it was impossible to extinguish the fire under the floor plates. The circulation of air was sufficient to allow almost complete combustion. At 1529, fourteen minutes after entering the engine room, the fire fighting parties withdrew and closed the door from the shaft tunnel to the engine room. At this time, the average temperature was 659° F.

13. At 1529, covering of air intake openings was started. It was found that the canvas used to cover the grilled opening between the second deck port passage and the Engineer's Storeroom had ignited and burned. This may, in part, account for the higher temperature developed in the port side overhead. The temperature at thermocouple No. 5 reached 1493° F. at 1524. This opening was again covered with canvas. Later this piece of canvas ignited and burned. At 1541, the covering of all air intake openings was completed. It was necessary to use water fog to cool some of the ventilators before covers could be placed.

14. At 1544, high velocity water fog was applied from two 1½-inch all-purpose nozzles at the main engine room entrance and also from one 1½-inch all-purpose nozzle at the starboard passage door on the main deck. An immediate decrease in temperature was obtained at all locations. The smoke emitting decreased in volume with considerable steam apparent. At 1604, an additional 1½-inch all-purpose nozzle was employed at the starboard passage door.

15. At 1543, one minute before the application of water fog, the average temperature was 578° F. A decrease of 81 degrees had occurred from 1529 when covering of air intake openings was started. During the twenty-seven minutes that water fog was applied, 1544 to 1611, the average temperature decreased from 578° to 240° F. The highest temperature was 407° F. at thermocouple No. 6.

16. At 1611, two fire fighting parties equipped with 1½-inch all-purpose nozzles again entered the engine room from the shaft tunnel. It took ten minutes for the fire-fighting parties to extinguish the burning oil using high velocity water fog. Application of water fog, from the main deck openings, was continued during this period. At 1621, the average temperature was 171° F. The highest temperature was 270° F. at thermocouple No. 1.

17. At 1622, the application of water fog was discontinued at the main deck openings. At 1626, all air intake openings had been uncovered. At 1628, the only remaining fire within the engine room had been extinguished. This was wooden shelving in the Engineer's Storeroom.

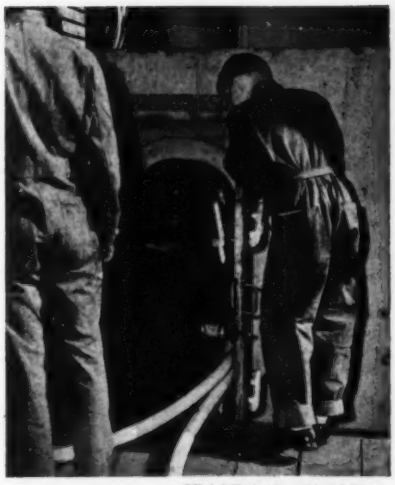
18. The fire fighting parties operated without respiratory protection.

19. At 1400, the following day, burning was discovered in No. 3 hold. Although the odor of wood smoke had been detected from time to time during this period, it was impossible to locate the source. Wooden planks, three by ten inches, used to retain a two inch thickness of insulation, which provides a protective bulkhead for the port fuel oil settling tank, were involved. The planks involved were located about one foot from the top of the settling tank and about three feet from the port shell plating. This fire was extinguished with a small amount of water.

21. The volume of water employed to control and extinguish the fire is estimated as follows:

First Operation—	Gallons
Applied from main deck openings	7,866
Used by fire-fighting parties	1,500
Second Operation—	**Gallons**
Applied from main deck openings	7,178
Used by fire-fighting parties	1,080
Total number of gallons	17,574

At completion of the test, the liquid level within the engine room had increased approximately nine inches on the starboard side. This had raised the oil level above the floor plates on the starboard side and extended inboard approximately seventeen feet. This rise of the liquid on the starboard side resulted in complete oil coverage of the hundred and fifty square feet, located at the forward port corner, which were not covered at the start of test. A part of this rise was due to several leaks, which developed during the fire, at blanked off pipe openings. This allowed some water from the forward tanks to enter the engine room. A considerable part of the water used to control and extinguish the fire was converted into steam which escaped from the engine room by way of the opening between the stack and stack casing.



Official U. S. Coast Guard Photo

Entrance to Shaft Tunnel Through Which Streams Were Directed on Fire.

22. The nature of the burning within the engine room was quite different from that which occurred during the preliminary test fires. The burning surface in the preliminary test fires did not exceed 346 square feet. With the oil released in the bilge, the burning surface was increased to approximately 1800 square feet. In the preliminary test fires, the oil was located in the boiler foundation spaces which formed tank like containers. Here, the air to support combustion had to enter from the sides and free burning did not extend to the center part of the surface. A considerable volume of black smoke was given off during the fires. With the oil located in the bilge, air is distributed over the entire surface and the burning at all points appeared to have had sufficient air to allow almost complete combustion. Except during the first few minutes of burning, no black smoke was emitted from the engineroom. At other times, the smoke was from dark to light brown or gray in color, and the volume was very limited. A much greater volume of heat was generated per gallon of oil consumed in this test than was generated during the preliminary test fires.

V. Condition After Test—

1. The ship was in practically the same condition as reported after test Fire No. 4, with the following changes:

(a) There was considerable warping

of the floor plates in the port side section.

(b) There was considerable warping of the deck of the port and starboard passages of the second deck.

(c) There was some warping of the shell plates, port side.

(d) Wooden shelving in Engineer's Storeroom was damaged by fire.

(e) Additional warping of the forward bulkhead occurred.

(f) Deck of carbon dioxide compartment extremely warped. Paint on deck and aft bulkhead blistered and charred.

(g) The two small doors located in the forward bulkhead of the engine room were warped during the fire. This allowed air to enter the engine room from No. 3 hold. These doors were cut in the bulkhead to provide access to the engine room from No. 3 hold for the placement of oil and the removal of water. Since these opening are not provided in a standard ship, this allowed more burning near the forward bulkhead than would have occured under normal conditions.

2. Five thousand gallons of oil provided an oil depth of approximately four and one-half inches. Following the test, sufficient water was removed to bring the oil level to the same position as before the test. The measurement of the oil depth showed approximately three and one-half inches remained. It was estimated that not more than 1200 gallons of oil were consumed during the test.

VI. Tentative Conclusions—

Some of the tentative conclusions set forth in the reports of previous test fires are not applicable, in their entirety, to a fire of this nature. They are:

Tentative Conclusions No. 1-3-4-5, Report of Test Fire No. 1.

Tentative Conclusion No. 4, Report of Test Fire No. 2.

1. The carbon dioxide system is not effective in an engine room of this type of ship under the following conditions:

(a) To extinguish and prevent reignition of a major fire involving fuel oil in the bilge.

(b) With ventilators and other air intake opening uncovered.

(c) When the carbon dioxide system is released after the fire has been permitted to burn for a period of time sufficient to heat the steel, in the vicinity of the burning oil, to a temperature greater than the ignition temperature of the oil. A burning time of seventeen minutes, starting with a cold engine room (average temperature of 61° F.) is more than sufficient to heat the steel.

2. To control and extinguish a fire of this nature, in an engine room of this type of ship, it is necessary to close the air intake openings.

3. The use of canvas to close the opening to the Engineer's Storeroom is not effective in this type of fire.

4. To reduce the temperature to a degree which will permit fire-fighting parties to operate at the floor plate level, it is necessary to apply sufficient volume of water, in the form of water fog, from the upper level of the engine room.

5. The extinguishment of the fire can be completed by firefighting parties, entering the engine room from the shaft tunnel, using water fog.

Photo by U. S. Coast Guard

Covering Ventilator Opening to Prevent Inflow of Air to Fire.

Remarks: It is believed that a safer and more practical method can be developed than relying solely on water fog. Water fog will be used to extinguish open surface burning and to cool the floor plates; followed immediately by the application of mechanical foam to cover the oil surface under the floor plates. This should protect against the hazard of a reflash occurring.

6. There is sufficient heat transmitted through the forward engineroom bulkhead, in a fire of this nature and duration, to endanger cargo stowed in No. 3 hold.

Test No. 6

I. Time—

On 13 November, 1944.

II. Purposes—

1. To determine if a major fire involving fuel oil under the floor plates could be extinguished by the control of air flows and the use of low velocity water fog applied from the upper level.

III. Conditions Before Test—

1. The engine room remained the same as reported after Test Fire No. 5 with the following exceptions:

a. Twelve hundred gallons of Navy Special fuel oil were added to the thirty-eight hundred gallons of bunker "A" fuel oil which were not consumed in Test Fire No. 5. Due to the starboard list, approximately ten thousand gallons of water were allowed to remain in the bilge in order to obtain maximum oil coverage without raising the oil above the floor plates. This brought the oil level to within two inches of the floor plates on the starboard side. Oil coverage of the bilge was obtained with the exception of about one hundred and fifty square feet at the forward port corner. This volume of oil provided an oil depth of approximately four and one-half inches.

b. The grilled opening from the second deck, port side, passage to the Engineer's Storeroom was closed with asbestos board previous to the start of test. This board was bolted to the grill and packed with asbestos packing to effect a positive air seal. The asbestos board was used because the asbestos cloth curtain was not available.

c. The two small openings located in the forward bulkhead of the engine room were sealed with bolted steel plates and asbestos gaskets. These openings were cut in the bulkhead to provide access to the engine room from No. 3 hold for the placement of oil and the removal of water.

2. Two 2½ inch hose lines were laid from a 500 gallon skid pump unit, located on the pier, to the main deck to supply the 2½ inch and 1½ inch working lines. One 2½-inch line with all-purpose nozzle and 12 foot applicator with low velocity head was laid to the main engine room door. A line similarly equipped was laid to the starboard passage door on the main deck. Two 1½ inch hose lines equipped with all-purpose nozzles were placed down the forward escape hatch to the shaft tunnel. One 1½ inch line equipped with a 1½ inch straight applicator and a 2½ inch low velocity fog head was laid to the skylight house on the boat deck. Additional 1½ inch lines equipped with all-purpose nozzles were located at various strategic points on the bridge and top decks for use in cooling the exterior of the ventilators, if necessary, before covering. From another 500 gallon skid pump unit, located on the pier, a 2½ inch line was laid to a twin twenty-five gallon mechanical foam pressure proportioner also located on the pier. From the proportioner a 2½ inch line was laid to the main deck to supply two 1½ inch hose lines equipped with mechanical foam nozzles.

3. An electronic pyrometer was used to determine the degree of heat at levels from three feet above the floor plates up to one foot down from the top of the stack and at all overheads within the space. Reference is made under Test Record to the thermocouple terminals at the locations given below. In the average temperatures given, however, thermocouple No. 15 has been omitted because the abnormal temperature obtained at this location is believed to be due to contact with flame.

No. 7—Projecting aft one foot into engine room at the mid-point of the second deck athwartships passage at the deck level.

No. 13—One foot down and one foot aft of top forward edge of stack casing on the topside.

No. 14—Six inches below ridge and five feet aft of forward bulkhead of the skylight house.

IV. Test Record—

1. At 1337, the oil in the engineroom was ignited at six different locations after priming with gasoline. Smoke banked down quickly from the overhead forcing the priming parties to withdraw from the engineroom by way of the shaft tunnel immediately following ignition of the oil.

2. From the topside, it was noted that almost immediately after ignition, black smoke started to come from the stack casing, the open skylights, and the forward port main ventilator. During the following ten minutes, the smoke coming from these openings was very black and in large volume.

3. At 1349, and during the following twelve minutes, the smoke coming from the stack casing changed to dense, dark

gray in color, with some dark brown smoke also present. At 1349, the average temperature within the engine room was 264° F.

4. At 1403, twenty-six minutes after start of test, covering of air intake openings was started. At this time the average temperature within the engine room was 401° F. Note: A hatch tarpaulin was used to cover the entire skylight housing including the two small ventilators. Specially designed canvas covers were used to cover the six main ventilators. These were the same as were used during Test Fire No. 1. Squares of canvas, six by six feet, provided with securing lines were used to cover the main ventilators during Test Fires No. 3, 4, and 5.

5. At 1410, thirty-three minutes after start of test, the average temperature within the engine room was 437° F. This average was the highest reached during the test.

6. At 1415, thirty-eight minutes after start of test, the covering of all air intakes was completed. At this time the average temperature was 419° F. During the covering operation, the emitting smoke constantly diminished in volume and changed to light gray and light brown in color.

7. At 1420, forty-three minutes after start of test, the average temperature within the engine room was 410° F. A very small amount of light gray and light brown smoke was emitting from the stack casing.

8. At 1425, forty-eight minutes after start of test, a 1½ inch hose line equipped with a straight applicator and a 2½ inch low velocity fog head was inserted under the canvas hatch cover, used to cover the skylight house, into an open skylight on the port side. The hose line was lowered approximately 15 feet and low velocity fog applied at this point. At this time the average temperature within the engineroom was 382° F. The highest temperature was 493° F. at thermocouple No. 7.

9. At 1430, five minutes after start of the application of water fog at the skylight, the average temperature within the engineroom was 339° F. The highest temperature was 420° F. at thermocouple No. 7. A very small amount of smoke with considerable steam apparent was emitting from the stack casing.

10. At 1435, ten minutes after start of the application of water fog at the skylight, the average temperature within the engine room was 291° F. The highest temperature was 353° F. at thermocouple No. 7.

11. At 1446, one hour and nine minutes after start of test, water fog was applied at the main engine room door and at the starboard passage door from two 2½ inch all-purpose nozzles equipped with 12 foot applicators and low velocity heads. At this time, the average temperature within the engineroom was 250° F. The highest temperature was 265° F. at thermocouple No. 7. During the twenty-one minutes that water fog was applied from the skylight house only, 1425 to 1446, the average temperature decreased from 382° to 250° F.

12. At 1455, the application of water fog was stopped at the main engine room entrance. At this time an extremely small amount of light vapors were emitting from the stack casing.

13. At 1501, entry to the engine room was made by way of the door from the shaft tunnel. It was found that the fire had been completely extinguished. The application of water fog at the starboard passage door was stopped. The lowest temperature was 80° F. at thermocouple No. 13 and the highest temperature was 175° F. at thermocouple No. 14. The average temperature was 136° F., a decrease of 246 degrees in the average temperature since the time (1425) when the application of water fog was begun.

14. At 1502, the application of water fog through the skylight opening was stopped.

15. At 1503, and during the following two minutes the covers were removed from the skylight and all main ventilators. As soon as the covers were removed, an inspection party entered the engine room by the main door and proceeded down the ladders to the engine room floor. The inspection party experienced no more discomfort than they would have experienced in an engine room under normal operating conditions.

16. Heat indicating lacquer showed that the following temperatures were reached:

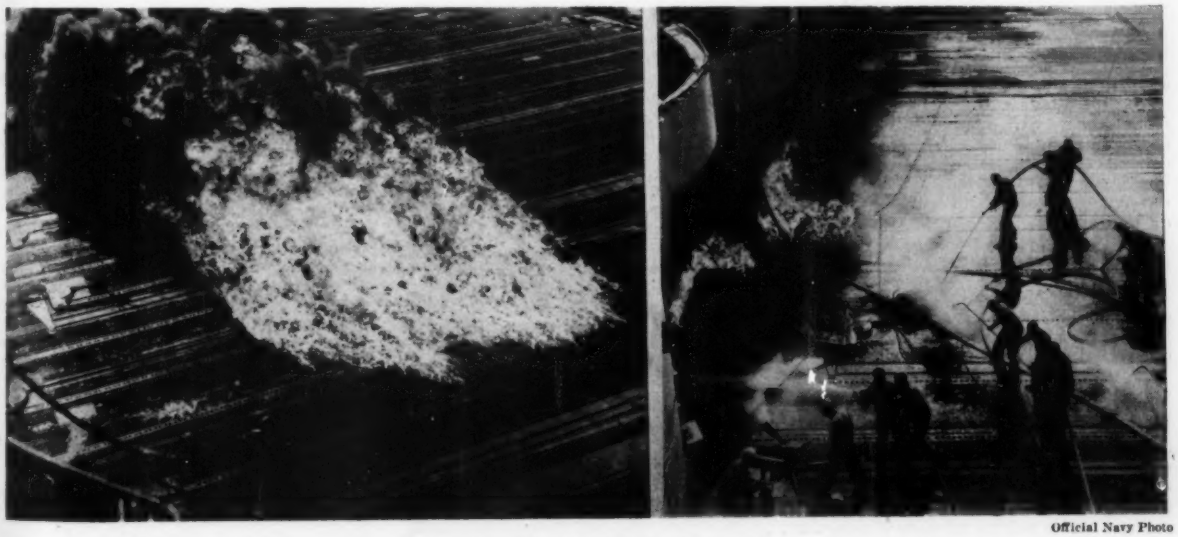
a. On the aft bulkhead of No. 3 hold, a temperature of at least 175° F. was reached at all locations and a temperature of 500° F. was reached at some locations. None of the spots painted on the forward surface (15 inches from bulkhead) of a vertical "I" beam bulkhead stiffener reached 175° F.

b. In the No. 3 'tween deck section, spots painted on the deck one inch from the aft bulkhead and on the bulkhead at points one inch above the deck and five feet above the deck reached 175° F. only at the mid-point.

c. In the No. 4 'tween deck section, spots painted on the deck one inch from the forward bulkhead reached 250° F. and spots painted on the bulkhead at points one inch above the deck and five feet above the deck reached 250° F. at some locations.

17. The volume of water employed to control and extinguish the fire was estimated at approximately 6,954 gallons. At the completion of the test, the liquid level within the engine room had increased approximately two and one-half inches. This had raised the oil level one-half inch above the floor plates on the starboard side and extended the exposed surface inboard approximately two feet. The rise of liquid resulted in complete oil coverage of the hundred and fifty square feet located at the forward port corner which were not covered at the start of test. A part of this rise was due to a leak, which developed during the fire, at a flange connection on a pipe from the fresh water tanks. The increase of water in the bilge at the completion

(*Continued on page* 178)



Official Navy Photo

Fighting Fire Aboard a Carrier, Luzon, P. I.

When a fighter in landing aboard this Essex-class carrier lost its belly tank, which tore loose from it and exploded, the resultant fire swept clear across the flight deck. But clock-work efficiency on the part of the crew had the fire out in half an hour. In the photograph on the left can be seen a Navy crewman moving in close to the inferno, carrying his hose with fog applicator. In the right photograph, deck hands are pouring streams of water on the few remaining flames.

Flameproofing—

A Proven Method of Reducing Fire Losses

By GUSTAVE E. BONADIO, B.S.*

FLAMEPROOFING is not by any means a modern discovery. Even a sketchy investigation of historic records discloses unquestionable evidence that flameproofing was practiced way back in the early years before Christianity.

At that time, various attempts were made to protect wood and wooden material against fire. Later, in mediaeval warfare, the mobile wood towers which were used for storming enemy strongholds and for the transfer of soldiers onto and over the walls of enemy forts were treated with various alum concoctions in order to render these towers less vulnerable to attack from the hot pitch and fire which the enemy hurled from his catapults and flamethrowing devices.

Early in the 17th century, a certain degree of fire protection was achieved in theatres by the simple expedient of mixing clay into the paint which was used for coloring canvas decorations.

Practices such as these were forerunners for later and more advanced flameproofing techniques which involved the use of such fire-retarding chemicals as borax and various ammonium salts.

Meaning of "Flameproofing"

Even though this be a brief study of flameproofing, it is imperative, before we proceed further, that we define exactly what we mean when we speak of "Flameproofing."

Terms should not be used loosely, but unfortunately, it is not uncommon, even within the fire profession, to find the terms "fireproof" and "flameproof" used as though they were synonymous. This is definitely not the case. Actually, there is no such thing as a truly "fireproof" substance, for all materials, even though they may not enter into combustion, do nevertheless, become affected in one way or another by fire.

A truly "fireproof" substance is a theoretical ideal which is yet to be achieved. The terms "flame-resistant", "fire-resistant", "fire-retardant", and "flameproof" make for better terminology, are far more appropriate and infinitely more correct.

"Flameproof" means fire-resistant to a high degree and incapable of flame propagation. Flameproofed material, therefore, even though in contact with a live flame will not, if properly protected, transmit flame to any substances adjacent to it. This does not mean that material so protected will not undergo change. As a matter of fact, it may be expected to char or otherwise decompose. Inflammable material which is efficiently flameproofed will oxidize to a certain extent when in contact with flame, but such oxidation takes place slowly and cannot be classed as combustion (rapid oxidation).

A flameproofed substance in contact with an external flame source can, in some cases, be made to glow, but it will neither emit nor transmit flame and if the external flame source is removed, the substance will of itself become extinguished.

A Shed, Built of Treated Wood, as It Appeared After Being Subjected to Conflagration Temperature for Two Hours. Some of the Wood Has Been Charred, but None Was Ignited

Every inflammable substance normally has an "ignition point" or "ignition temperature", that is a minimum temperature at which actual self-sustaining combustion may be initiated. When a substance is flameproofed, it loses this characteristic. Fire-retarding chemical compounds are introduced into or onto the materials being protected either by chemical impregnation (injection), or by spraying, dipping or painting: Such chemical treatment, if successful, raises the ignition temperature to such a high point, that it is rarely attained under ordinary fire conditions. Thus, when heat is applied, the substance does not merely absorb heat, reach its ignition temperature and burst into flame. Instead, the temperature remains definitely below the ignition point even though the external source of heat continues to act on the substance.

As has already been intimated, under such conditions, although the material does not "catch fire" neither is it exactly dormant. Action is taking place. A series of endothermic reactions, that is, "heat-absorbing" actions take place within the substance in question. The chemicals in the protected material change into gases which do not support combustion and which act as "oxidation inhibitors", that is they make it extremely difficult for oxygen from the surrounding air to come into contact and reacting with the heated material. Of course, some oxygen does get through and decomposition or slow destruction does take place within the substance, but this action is oxidation of a comparatively slow type and bereft of the dangers of actual combustion.

Successful flameproofing seeks to achieve the following aims:—

1. To keep down temperature increases of substances which are in actual flame contact.
2. To cause ignition temperatures of substances to become unattainable even though such substances be in contact with an external flame source.
3. To render substances incapable of flame propagation even though they be in actual flame contact.
4. To slow the rate of decomposition of substances acted upon by flames or extremely high temperatures.
5. To prevent fire in the first instance by introducing chemically an "oxidation inhibiting" quality to substances which normally are readily inflammable.
6. To simplify fire extinguishment by decreasing the amount of combustible material.

Let us now consider some flameproofing methods. This article will give particular attention to chemical fire-retarding techniques for cellulose substances, that is substances of vegetable origin such as cotton-cloth, paper, and wood, inasmuch as these are far more dangerous than substances of animal origin such as silk and wool.

Flameproofing Paper

The flameproofing of paper is a relatively simple matter. The cost is comparatively low and is certainly warranted when the aim is the fire-retardance of decorations or the protection of valuable legal papers such as wills, deeds and so forth.

One method of manufacturing flameproofed paper on a commercial scale is by using fine quality asbestos fiber which is treated with a solution of potassium permanganate and then bleached by means of sulphurous acid. To this treated asbestos fiber is added a small amount of wood pulp, glue water and borax. This mixture is then worked into paper and given a smooth finish to render it suitable for writing.

Other processes involve the addition of flameproofing chemicals to the finish and in some cases, a very high degree of fire-resistance is attained by treating the finished paper itself.

A simple and economical method for flameproofing paper, whether it be intended for documentary use, decoration or otherwise, is by treating with a warm solution of borax, boric acid, and ammonium sulphate in water. The paper to be flameproofed is dipped into this solution, dried and pressed. This method is adaptable to home use for such paper decorations as streamers, bunting, and similar items

Flameproofing Fabrics

Fabrics are flameproofed by two basic methods. One method is by impregnating the fibers of the textile with chemicals. A second method is by coating the fabric with substances which either evaporate or melt in the presence of extreme temperatures.

*Member of New York City Fire Department.

When such treated textiles are dried, the solvent of the solution evaporates leaving the solute (solid matter) on the fiber and within the interstices of the fabric. In contact with flame or extreme heat, such treated fabric gives rise to chemical action which culminates in one of two resultants:—If the chemical flameproofing agent melts, it covers the fibers and the spaces between with a glassy coating. On the other hand, if the flameproofing chemical used is one which evaporates in presence of heat, gases are given off which neither burn nor support combustion. In either event, as was explained earlier in this article, an "oxidation-inhibiting" quality is imparted to the treated textiles.

To achieve such results, various chemicals are employed, the most common being those having low fusion (melting) points. These include phosphates such as ammonium phosphate; sulphates, such as ammonium or tin sulphates; chlorides such as ammonium, magnesium, zinc or calcium chloride; stannates, that is various tin salts and borax, boric acid, aluminum hydrate and alum. There are many other chemicals which are capable of imparting a fire-retardant quality, but some of these affect the fabric by altering its color, or they are liable to produce poison gases in the presence of fire and they are therefore undesirable. Some of the most common flameproofing agents for fabrics employ ammonium sulphate, ammonium phosphate and ammonium chloride in water solutions. These chemicals are both economical and easily obtainable and solutions of them can be used to impregnate the cloth or may be added to the sizing.

For home use, the U. S. Department of Agriculture recommends the following formula:

Borax	7 parts
Boric Acid	3 parts
Water (hot)	2 quarts

This solution is most effective and lends itself easily to home preparation. Furthermore the chemicals are very inexpensive and may be purchased in most any drug or grocery store. In fact, the average household usually has borax in its laundry and boric acid in the medicine chest. The only drawback to this method is the fact that materials so treated lose their ability to resist fire once they are washed. It is necessary, therefore, to repeat the flameproofing process after each laundering.

"Permanent" flameproofing methods do exist. Patents have been issued for commercial flameproofing processes which are supposed to impart a fire-retarding quality which is retainable through at least twenty-five launderings.

Fire-Resistant Wood

Wood may be rendered fire-resistant either by impregnation with suitable flameproofing chemicals or by painting with fire-retarding paints. The former is strictly a commercial process which runs something like this:—The resinous matter contained in the wood is dissolved by steaming. The steam is then withdrawn, the wood set in a vacuum chamber, and the dissolved resins, gums and sap are forced to the surface whence they are removed by washing. Then, flameproofing solutions such as ammonium sulphate, ammonium phosphate, etc., are introduced into the wood under pressure.

Whereas a means of ignition of brief duration would set fire to ordinary wood, chemically processed wood, which has undergone a treatment such as described, would resist combustion indefinitely under ordinary fire conditions. This method, however, has one drawback. All cutting and other processing of the wood must be carried on prior to treatment. It should not be cut or planed after fireproofing.

Fire-resistance by painting has certain definite advantages. No special skill is required for the application of fire-retarding paints which can either be brushed on or sprayed. No particularly unusual equipment is required. Moreover, the method is adaptable to home use and is economical. Two tasks—painting and fire-retarding can be accomplished by the one operation—and coatings can be renewed from time to time as required.

Although it is readily understandable that flameproofing by painting would tend to be more popular than the commercial method of chemical impregnation, available information would seem to indicate one definite advantage in favor of the latter method inasmuch as a greater degree of permanence is attainable than is the case with painting.

Before leaving the subject of wood and its protection against fire, it might be timely to discuss briefly the flameproofing of Christmas trees.

It is difficult to get accurate statistics to show just how much damage is attributable to Christmas tree fires, but insurance companies agree that each year numerous fires of this type cause extensive destruction. From a fire prevention standpoint of view, the Christmas tree is a seasonal menace.

To illustrate, consider the following item which came to the attention of the author as this article was being written. It appeared in the New York Journal American on Tuesday, January 2, 1945. Words in parentheses are the author's.

"PROMOTED, KILLED IN FIRE: —After 17 years service in the (New York) Fire Department, (Fireman) Joseph A. Joyce, 40, . . . attained the rank of lieutenant yesterday—only to die 14 hours later as he led his company against a blaze started by faulty wiring on a Christmas tree. . . ."

Tragedies of this type can be averted by bringing the problem and its solution to the attention of those whom it most concerns—the average American family.

Showing the Results of Treating Christmas Trees

Two trees of like size were used in this test. The one at the right has been given a treatment of fire-resistant chemicals; the one at the left is untreated. A torch was applied to both, but only the untreated one burned.

Throughout the country, once each year in October, the principles of safety from fire are advertised during Fire Prevention Week. A little fire prevention campaign along these same lines, having as its object the education of the public on the subject of Christmas tree hazards and their prevention, could very easily be launched in December just before the holiday week.

Simple home methods for the flameproofing of Christmas trees could easily be relayed to the average family by teaching its principles and issuing pamphlets to school children, by radio lectures and by other similar means.

The flameproofing of a Christmas tree is a simple matter. It hinges on the fact that a relatively freshly-cut tree is capable of absorbing solutions through its trunk and of distributing same throughout its branches and needles. It is easy to perceive how a Christmas tree can be made fire-safe if it can be made to absorb a fire-retarding solution of some sort.

The U. S. Department of Agriculture has carried on some research and has released some very definite information on this subject. Water solutions of ammonium sulphate or calcium chloride are recommended inasmuch as they do not mar the decorative value of the tree while at the same time imparting to it a pronounced fire-retarding nffect.

An efficient, practical and economical flameproofing solution can be readily obtained by using an amount of either chemical equal in quantity to ¼ the weight of the tree to be treated—adding 1½ pints of water for each pound of chemical. A green tree, the trunk of which is allowed to soak in such a solution will absorb enough of it to render it fire-safe. Aluminum sulphate and calcium chloride are both inexpensive and easy to procure. The former, particularly, is obtainable in stores which deal in gardening supplies.

The average family purchases its Christmas tree several days or a week before Christmas and then stores it on the back porch or in the basement where it slowly dries out and becomes more dangerous. If properly informed, it would be a relatively simple matter for such a family to prop their Christmas tree in a pail of flameproofing solution and thereby have a safe tree on hand when they are ready to trim it.

Legal Aspects of Flameproofing

The legal aspects of flameproofing are an important consideration. In most municipalities, there are in existence laws which have as their goal the achievement of some degree of fire prevention. These laws usually include rules relative to flameproofing, the requirements of which vary from city to city, reflecting the conditions under which they were originally framed. Such statutes are as effective as their enforcement. In other words, if a law of this type is unenforced, it might just as well be non-existent.

It is a regrettable fact, but a fact nonetheless, that until a comparatively recent date, little legislation existed along these lines. Then, three major tragedies, occurring in rapid succession, shocked the nation and roused it from its apathy. Five hundred persons lost their lives in the Cocoanut Grove night club of Boston, Massachusetts, when a fire flashed through the highly flammable decorations. Two weeks after this calamity, one hundred persons died in a fire in Newfoundland. In a third holocaust, in a dance hall down south, two hundred and seven persons were burned to death. And this was not the end by any means. On July 6, 1944, 168 persons, mostly children, lost their lives when fire sped with lightning rapidity through the canvas "Big Top" of the Barnum & Bailey circus.

Public reaction to these catastrophies was sharp and vigorous. All over the country, preventive legislation was immediately passed and in each instance, the new laws included some sort of regulations relative to flameproofing.

Soldiers Fight Fire on Yank Airfield

Air crash fire fighting on the battlefield base has its own problems. Here Yank soldiers combat blaze at a P-38 Lightning Base in Belgium following a crash between a fighter-bomber and gasoline truck. Plane—part of U. S. 9th Air Force—was trying to land. Note use of high pressure foam and fog.

The laws which were enacted in New York City are illustrative of this and although they are no criteria, they are representative of the legal aftermath which swept the country as a result of the Cocoanut Grove and other disasters. Local Law 29, approved in New York City on July 24, 1943, added several sections to the city's administrative code. The following extract is quoted from this law:—

"FLAMEPROOFING OF DECORATIONS, DRAPES, CURTAINS AND SCENERY.—It shall be unlawful for any person to use any decoration, drape, curtain and scenery used for artistic enhancement, which is made of combustible material, unless painted or saturated with a non-combustible material or liquid or otherwise rendered safe against fire in accordance with the requirements of the commissioner, in any building of a public character, including a hotel, theatre, restaurant, public hall, department store, and a building used, or intended to be used for purposes of public assembly, or licensed places of public assembly, amusement or instruction, and a building where large numbers of persons congregate. The liquids, material or compounds, as required under the provisions of this section, and their method of application, shall be approved by the Board of Standards and Appeals. Tests for each specific application of originally treated combustible material, or any retests thereof, and the testing of all flameproofed products, permitted, pursuant to the provisions of this section, shall be as prescribed by, and in accordance with the requirements of the commissioner. . . ."

In the above quotation, where reference is made to the "commissioner", it means the Fire Commissioner. Note also that the "liquids, materials or compounds, . . . and their method of application" must be approved by a board known as the "Board of Standards and Appeals." Reference to the pertinent rules of this board reveals that the approved flameproofing compounds include borax, boric acid, and various ammonium salts such as ammonium sulphate, ammonium phosphate and ammonium chloride. The rules of the fire commissioner require that flameproofed materials must be able to withstand at least 400° F. applied by means of an open flame. Under such conditions the material must not flash nor support combustion and must not glow except for glow which is confined to the charred area of the specimen being tested. These rules further require that an affidavit showing by whom the materials have been flameproofed and the approximate period of efficiency of such flameproofing be filed with the Fire Department. It is of interest also to note that approvals for flameproofing issued by the New York City Fire Department expire at the end of one year at the end of which time, materials must be re-tested.

While on the subject of laws relative to flameproofing, it may be instructive to consider how the New York Fire Department handles the annual problem of Christmas decorations in department stores, retail stores, hotels, hospitals, institutions and other places of public assembly. Regulations by the Fire Commissioner-Chief-of-Department permit the use of one tree and a limited amount of fresh-cut decorative greens in such

(Continued on page 180)

You Don't Need It!

It is Suggested that Even the Big City Chief May Get an Idea From This Article by a Small Town Chief

By ROD A. PORTER
Chief, Portage, Wis., Fire Department

"YOU don't need it!" That's the answer a lot of you small city and village fire chiefs are getting from your council committees or police and fire commissions when you go begging for new equipment for your department—yes, even for replacements. And it gets pretty monotonous, doesn't it?

As a small town chief, I've probably done more than one man's share of crabbing mainly because I have felt that altogether too often our requests for equipment have been turned down arbitrarily—not because due consideration by the members of the municipal committee governed their action. I have also discovered that no amount of beefing will solve the problem and it is unlikely that such procedure will solve it elsewhere. What can we small towners do about it?

Without making any promises or predicting a sure cure for anybody I offer these suggestions in the belief that something can be accomplished by—

First: *A size-up.* Instead of becoming chronic grumblers we should attempt to make a size-up of ourselves and of our own local situation. Are we making the most of what we have? Are we trying to cooperate with our town's officials? Do we meet with them often enough to keep them informed concerning our own department with the end in view of promoting a sympathetic understanding of our problems? And when we do meet with them are we fully prepared to present our case. You can't sell city officials on the idea of buying "a helmet for every man" when your firemen are never seen wearing the two you have hanging on the side of your truck.

Are we playing the beggar's role when we should be the ace salesman of our own department. We should not make a request unless we know that it has merit. Once this matter is settled in our mind, why should one be bashful about asking for anything? There's no need to be apologetic for asking your purchasing committee to provide adequate public protection of which good equipment is a vital factor.

Don't Be Backward About Coming Forward

Have you given any talks to your home town service or business clubs or school groups. With rationing of gasoline keeping most club programs strictly local in character, even a fire chief is now welcomed as a speaker. Do you discuss your problems with your community citizens and do you furnish your local newspaper with stories about your own department and its activities? As a former newspaperman, I recommend that you do so. Don't just take a mimeographed copy of fire prevention "don'ts" to your editor. Give him some live material, in addition, about your own fire prevention program.

Chief Rod A. Porter

Let the public know that your department is on the job between alarms—that the welfare of the fire department is directly concerned with their welfare—that they, more than you, benefit from funds spent for fire fighting equipment. You can't do it over a card table in the engine house club room. You can do it by showing you citizens that a fireman's job is not a lazy man's paradise. You can do it by demonstrating, in the conduct of your department's affairs, its drill program, and in its actual fire fighting work, that even in small towns the fire service is a profession of dignity, an organization to be respected, not ridiculed; helped, not turned down. But remember, Chief, the size-up is your responsibility.

Second: *The Attack.* When you go to your committee know exactly what you want. Be prepared to give them sound advice and to show them why your department should have what you recommend. One of the best approaches to this problem is to secure a model or to borrow a similar or identical piece of equipment to that which you are requesting and to demonstrate its use. Most councilmen and village board members don't know a hose clamp from a hose jacket. They are not necessarily expected to know these things. It's your duty as chief to adequately and accurately inform them.

Don't ever make any rash claims for any equipment. Give them the facts and you'll never regret it. They'll learn to respect your advice whether they like you or not.

And that brings us to the most important consideration of all: What is your personal status with your purchasing committee? What do you think of them. There's the rub, isn't it! No matter how well we may serve our community and no matter how cooperative we may be, sometimes, we find ourselves trying to convince "that so-and-so from the first ward that I need a new set of tires on that rig," and—well, you are probably going to have to take more than you give, for a while, at least. In the meantime, don't back down an inch or let him know for a minute that he's got you on the ropes. You must reckon with the fact that there are probably some members of your own department and quite a few citizens who are pleased by his political presence. Why not work on them. Play up to your public. By all means possible get people interested in your plans. Do a little public educating on the street corner if you must. It takes a lot of chips to fell a big tree.

Know Your Laws and Ordinances

Now—how many of you know fire department law? If you haven't made an attempt to learn it as it applies to you and your own department, you don't belong to our order. There are a lot of things in that book of state statutes—and your local code of city ordinances is equally important—that will help you. And there are probably as many things therein which you'll think are hindering you but ALL of them apply to you and your department. Better get yourself posted on this stuff, brother, or you'll find yourself in many a bad mess.

Don't forget that village attorney—the guy you bawled out last week for using 25-amp fuses—can assist you with your problems. Make use of his services, but don't wear out the door knob.

Remember, too, that you may have to play politics of your own. You must have some friends on the village board or on the fire and police commission. Tell your story to them. Give them the facts and be certain that what you say IS fact. Whoop it up with your own firemen. They are as much interested in the welfare of your fire department as you are. Enlist their support of your program. Heed their suggestions. You may have a few duds at your drills and fizzles at your fires but most of your men can and will help you build up pressure with the public as well as with the engine—if you will accept them as partners in a good proposition. They want new equipment. A lot of them will suggest it. Right there you have support of your recommendations.

Third: *The Overhaul.* Once you've succeeded in getting a piece of equipment, use it. Keep it up and show some appreciation for its presence. Be sure your men know how to use it and how to care for it. In other words, justify the act of your council or board and

you'll find that the next request will receive more favorable audience.

Remember, Rome wasn't built in a day and the city fathers won't raise the taxes just to get you a new fire engine even though you and I know that it's for the public good. There's an election coming up next spring. In the meantime, don't let up. Subscribe to one or two good fire service journals (You can't beat FIRE ENGINEERING). Get a set or two of approved drill texts even if you have to buy them yourself and loan them out to your men. They'll eat the stuff and they'll improve themselves whether or not they agree with all the material. Go to your state convention. If ever possible, attend the International convention. You'll meet fellows there like yourself and their problems are just as tough. You'll find out for yourself what equipment is the best for your own needs too.

In truth, my friend from the small town, you'll meet men with problems which will multiply yours by 10 and even 20. But you'll find that they are not grumblers even though they may and do have 20 years old fire engines and tattered hose. Some of them see a fire every week like the one your town had years ago that the editor called "the worst in Waukesqwak's history." That's when your city bought the old pumper, remember?

Pick-Up: I have just received a letter. It's from the chairman of my council's fire committee who, referring to my budget requests for '45, states:

"The matter was discussed with the fire committee and the mayor and we wish to state that some of the items will be taken care of that we deem necessary equipment and salary adjustments are being considered in a general city bonus arrangement..."

SIXTEEN LIVES LOST AT FIRE IN BOARDING HOME FOR CHILDREN

Frame Structure Completely Involved By Fire when Fire Fighters Arrive

SIXTEEN children, most of them infants, and a woman were burned to death or suffocated when fire swept a wooden house operated as a nursery for war workers' children in Auburn, Maine, as the year began. Five other children and three women escaped.

The 11-room "nursery," which was formerly a farm building having an ell and a barn attached to the main structure, boarded children by the week, the mothers usually taking them home on week-ends. The proprietor, Mrs. Eva Lacoste, whose son Laurent, 14, helped rescue his brothers, Guy, 9, and Norman, 6, had been notified within two weeks previous to the fire, by Harry O. Page, State Commissioner of Health and Welfare, that a license to operate the nursery for 1945 would be held up until she obtained a city certificate that her home was not a fire hazard. Fire Chief Ralph Harden said he had not received a request for a certificate, but added that the dwelling met all laws relating to exits and the care of babies on the first floor. Page said that technical violations had prevented issuance of a permit, and asserted that one of the violations was the fact that Mrs. Lacoste was boarding more than the maximum of sixteen babies prescribed under the state code.

Sixteen Infants and One Woman Were Burned to Death or Suffocated in This Boarding House at Auburn, Me., When Fire Swept the Structure

The fire is said to have originated in the kitchen and was discovered about 5:40 A. M. by Miss Blanche Tanguay, night attendant and sister of the proprietor, when she went to warm some milk. She found the ceiling above the stove a sheet of flame and spread the alarm. Mrs. Lacoste, hysterical after the tragedy, first told officials she was awakened by an explosion which blew the lid from a kitchen stove which burned coal and ignited woodwork. Later, however, she told police, that she was awakened by the cries of her sister, Miss Tanguay. The latter, it is reported, attempted to reach the telephone "in the kitchen" but was blocked by flames. She then dashed outside, through the snow to sound the alarm. Miss Tanguay said she saw Mrs. Rose Cote, 54, the employee who lost her life, at the head of the stairs and called to her but Mrs. Cote said "she would dress first." She and her son, aged 5, were both burned.

The fire, which spread rapidly, fed by the highly combustible materials, was in almost complete command of the structure before firemen arrived. Mrs. Lacoste, who occupied a first floor room, ran into one of the nursery rooms and picked up two cribs and attempted to push two more with her body. According to her testimony, she collapsed at the door and the next she remembers was when she saw her son, Norman, crying on the porch, she suffered severe burns of the arms.

Screams of the children, many of whom were found dead with their heads thrust through the slats of their cribs, could be heard above the crackle and roar of the flames that left the one-and-a-half story filmsy structure a blackened shell. The babies were all in six rooms downstairs and five rooms in the upper half story. Firemen from Auburn and Lewiston were unable to enter the flaming house for some time and battled the blaze for two hours in the zero weather.

As word of the tragedy spread, parents of the infants rushed to the scene and there was considerable confusion. Many of the victims were children of service mens' wives, who had taken war jobs for the duration.

The tragedy brought into sharp focus the need for tightening the fire laws of not only Maine but other states. According to news reports, it has touched off public condemnation of the "wait 'till it happens" school of thought among some public officials who have been dilatory about enacting fire prevention laws and instituting safety education, starting with school children.

A Correction

Several readers of FIRE ENGINEERING have pointed out an error in the story of the fire in St. Ambrose Church Hall, Baltimore, on page 35 of the January issue, which referred to the edifice as a colored church, in the city's colored section. This was not the case. The congregation and the victims of the fire were white. Press statements that doors of the church opened inward are also incorrect, according to our informants.

COLLIDING TANKERS CREATE FIRE WHICH INVOLVES OTHER SHIPPING

Heavy Loss of Life Results from Burning of Inflammable Cargo

A Staff Report

ON February 5th, 1945, fire resulting from the collision of two tankers in New York harbor resulted in the known death of fourteen persons, with fourteen missing and many burned and injured, the destruction of much of the cargoes of two tankers, serious damage to the ships, and to other vessels in the roadstead, while threatening the entire lower bay waterfront.

Because of its actual and potential magnitude, and compared with other similar fires, the "stop" made by the combined municipal and Coast Guard fire forces of the Port of New York is considered outstanding.

We are privileged to quote from the official report of the Coast Guard, on this fire.

At approximately 0850 the Panamanian 8,000 ton tanker SS Pan Clio was maneuvering in the upper bay preparatory to getting under way and, in turning, collided with an American 17,000 ton tanker, the SS Spring Hill, anchored in the vicinity. The crash resulted in a hole being torn in the port quarter of the Spring Hill, liberating about 3,500 gallons of gasoline from number two tank on port side. At the time the tanker Spring Hill was loaded with approximately 175,000 barrels of high octane gasoline.

Gasoline Vapors Ignited

Soon the gasoline vapors ignited and the entire amount of spilled gasoline, which had completely surrounded the Spring Hill, was aflame. The tide was ebbing and the burning gasoline came down upon another tanker, the Norwegian 10,000 ton SS Vivi, fully loaded with fuel oil. Before the Vivi could get under way she was partly engulfed by blazing gasoline and her superstructure was set afire. The SS Pan Clio sustained a bent stem and scorched bow but, it is reported, suffered no fire on board.

The vapors were undoubtedly ignited by sparks given off at the time of collision at tank No. 2. This resulted in the top of tank No. 9 of the starboard side being blown off. The vapors issuing therefrom acted like a gas retort when ignited, the flames shooting high into the air.

The chief loss of life is attributed to the fact that in the excitement, and possibly due to panic, members of the crews of the tankers and of the Liberty ship Bernard Carter, which was threatened by the flowing burning gasoline, jumped overboard.

According to the report, it is thought that had the men of the Spring Hill retreated below decks aft, possibly many would have been saved. One crew member retreated to the ship's ice box and lived to tell about it. The Bernard Carter was anchored astern of the Spring Hill, also at anchor, and the Tanker Vivi was moored approximately 1,000 feet from her stern. Crew members of the Liberty ship, observing the approach of the burning gasoline became excited and jumped into the water. Some of these men were lost. However, the Bernard Carter was not damaged by fire because the gasoline burned out before it could damage the vessel.

The report calls attention to the fact that the fire on each of the tankers was extinguished while both vessels were at anchor.

The fire fighting forces consisted of three (3) New York City fireboats; four (4) Coast Guard fireboats; and numerous Navy, Coast Guard and commercial tugs. Additional manpower, and foam powder and liquid foam were furnished by the Coast Guard. The total amount of foam used was ninety-two (92) cans of powder and one-hundred-five (105) cans of aero foam. Many heavy streams of water and high and low velocity fog were used during operations.

The fire, which started at about 0850, was brought under control within one hour when men were put aboard the Spring Hill to clean up and overhaul. No foam was used aboard the Vivi. The fires on this ship involved class "A" material and were extinguished with high velocity fog and solid streams, as conditions warranted.

Much of the success of the fire fighting operations is attributed by some to the manner in which the large body of flame from the burning No. 9 starboard tank of the Spring Hill was snuffed out by the application of two heavy streams from the deck pipes of the New York City fireboats. These two streams were brought to bear on one another so to provide impinging streams, then simultaneously lowered to the tank top, thereby snuffing out the vapor fire and at the same time cooling the sides of the tank opening to permit the advance and application of foam streams.

At that time numerous water streams from all tugs and other craft were being directed to the deck and superstructure of the Spring Hill which served to cool the tank tops and sides, thereby reducing pressure inside the tanks as well as reducing the rate of evaporation of gasoline. Foam streams were also discharged from various Navy and Coast Guard vessels to burning gasoline on the main deck of this tanker. This gasoline was dripping from the broken cast iron fittings, such as "tees" and valve bodies of the horizontal pipe lines running fore and aft on top of the tanks.

As soon as the flame from tank No. 9 was extinguished and a quantity of foam discharged into the tank, men were put aboard with additional 1½ in. hose lines equipped with high velocity fog nozzles. These lines were used to extinguish fire in the various staterooms on the aft portion of the Spring Hill, as well as other class "A" fires forward in crew's quarters and the boatswain's locker. At this point it was necessary to use gas masks to get to the briskly burning boatswain's locker. After the gasoline fires were extinguished, only small quantities of combustible materials were smouldering in various rooms aboard and short work was made of these by overhauling. At approximately 1200 fire fighting apparatus was being relieved.

It is reported as fortunate that none of the tanks of the Spring Hill was ruptured as the result of cold water striking the hot tank tops during fire fire operations. Had this happened a serious situation would have developed, possibly resulting in a loss of vessels and additional loss of life.

Estimates of the casualties are conflicting, local news reports placing the total deaths at 19 with 74 of the 121 seamen and Navy enlisted men burned in the explosion or suffering from submersion in the icy bay still in hospitals the day following the disaster.

Municipal, Coast Guard and Navy Fire Forces Subdue Fire on Tankers Spring Hill and Vivi Following Collision in New York Harbor, with 19 Reported Dead, Scores Injured

The New York Fire Department received the first alarm at 8:59 A. M. from Box 3-2675-1 at 57th Street, Brooklyn, and at 9:04, Box 236, Pier 11, Staten Island. The fireboat "Strong" from St. George, Staten Island responded, in charge of Lieut. Keegan, who quickly radioed for two more boats. Chief Holian, in charge of the Marine Division, went from Manhattan down the bay in the "Fire Fighter" and the "Gaynor" responded from Brooklyn. It is reported the three boats used 10 tons of foam, most of it supplied by the Navy. The only fire department casualty was fireman T. J. O'Neill, who was injured.

NEW HAVEN INSTALLS RADIO FOR SOLE USE OF FIRE DEPARTMENT

All Apparatus in the Department Will Ultimately be Two-Way Equipped

By Thomas Magner

IN the July, 1944 issue of FIRE ENGINEERING, announcement was made of the relaxing order of the FCC to permit fire departments in cities of 150,000 and over to own and operate their own independent emergency radio communications systems.

Quickly after this notice, Fire Chief Paul P. Heinz of New Haven, Conn., with the approval of his city's officials, formally applied to the FCC for the necessary license for what was to become the first fire department radio system in the State.

Shortly thereafter, two-way radio station WMUJ of the New Haven Fire Department went into commission, operating on 35,580 kilocycles with a 50 watt FM transmitter.

Under the new hook-up the Department has two-way communication with cars of Fire Chief Paul P. Heinz, the Deputy Chief and the three Battalion Chiefs. Also two-way equipped is the Department's fire boat and Emergency Unit. As soon as additional material is available all fire fighting apparatus in the Department will be two-way equipped.

The main station transmitter is located in the Fire Alarm Telegraph office at Headquarters on Court Street and the remote control transmitter is installed on a desk adjacent to the Department's PBX board. In connection with the remote control transmitter, the Department has a unique board called the "Lokator" which was constructed by the members of the Department. This board is manually controlled by electric switches. By a quick glance at the board the operator on duty can locate any of the Department's cars whether or not they are in quarters or on the air in any part of the city. This "Lokator" board is necessary, Fire Chief Heinz explains, because the Battalion Chiefs in New Haven are not provided with drivers. In the event a Battalion Chief is off the air while on station inspection the board operator must know his location should he fail to receive a transmitted message.

Another feature of the system is the public address amplifier which has been installed on the Emergency Unit. The radio receiver is so wired to the amplifier that messages transmitted by all cars and by the main station may be amplified at the fire area. In this manner the officers and men are in close touch with Headquarters while operating at a fire and do not necessarily have to be with their receivers to receive messages.

In the Battery Room at Headquarters there has been installed a 5 KW gasoline motor generator unit which assures the system of continuous service during an emergency or power failure. On the roof at Headquarters is a 50 ft. mast, on top of which is a coaxial antenna to transmit and pick up all messages. All Fire Alarm Telegraph operators, as well as the officers of the Department along with 60 per cent of the regular members, have restricted licenses.

For several years the New Haven Fire Department has had radio equipped apparatus operating through the Police Department's transmitter. New Haven is the first city in Connecticut to install two-way radio fire department communication, Chief Paul P. Heinz having applied for a license at the FCC immediately after the Commission ruled that cities in New Haven's population group were eligible for independent fire department radio channels.

New Haven F. D. Has Own Radio Station

Fire Chief Paul P. Heinz (right) looks over the control room of the fire department's new radio station WMUJ. Note "Lokator" feature designed by members of the department.

International Association Grows

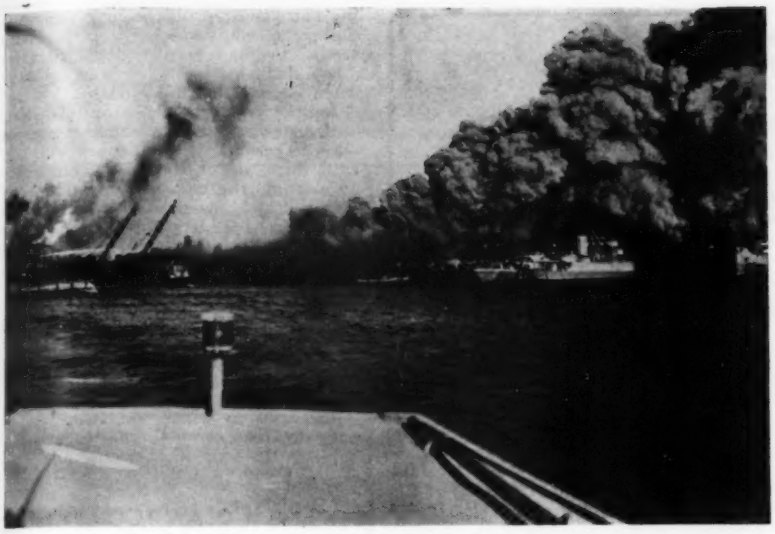
The dues paid into the International Association of Fire Chiefs for the year 1944 reflect the growth in membership. Here is the comparative table, by Association Divisions:

Division Association	Members 1943	1944
Dominion	115	143
Eastern	531	548
Great Lakes	155	345
Missouri Valley	148	160
New England	260	422
Pacific Coast	426	902
Southeastern	145	238
Southwestern	56	184
Non-Affiliates outside of N.E.	44	30
Totals	1,880	2,972

Volunteers Make Rescue

Driven out by smoke and fire, Joseph LaTutte was rescued by Carthage, N. Y., volunteer firemen as he hung from a third story window of a business block on Jan. 13.

The fire swept an apartment on the second floor and LaTutte, unable to make his way downstairs, was forced out a third story window to escape the thick smoke which rolled up through the building. Firemen brought him down on a ladder and fought for two hours in sub-zero weather to extinguish the flames. SANFORD D. DEWEY



Forty Hurt Fighting Waterfront Blaze in Norfolk, Va.

This is a general view of the waterfront where a two-alarm fire in the Navy Yard Annex at Norfolk caused complete destruction of two piers and damaged other piers, Naval vessels and equipment. More than forty Naval and civilian fire fighters were injured combating the blaze. Note warships tied up to piers at right of photo and the flames shooting into the air at left.

Chief James Armstrong Retires

At the February 1945 meeting of the Board of Directors of the Dominion Association of Fire Chiefs held in the City of Kingston, Ont., Ex-Chief James Armstrong tendered his resignation as Secretary-Treasurer of the Association—a post which he has held for thirty years.

President, Chief W. L. Andrews, has appointed Chief Allan H. Clark, of Lakefield, Ont. to fill the position left vacant by Chief Armstrong's resignation until the annual election of officers, which will be held at the next conference of the Association. Chief Clark has served as Assistant Secretary for the past six years and is widely and popularly known throughout the Association.

Snow Plow Aids Firemen

In Northern New York state where a low temperature of 48 degrees below zero has been recorded this winter and frequent blizzards have blocked highways, volunteer firemen of Lowville had a snow plow break open the roads as they responded to a rural call on Jan. 7.

Highways were nearly impassable when the alarm was received and firemen contacted road officials who dispatched a snow plow crew to precede the fire truck. The fire, in the village of Denmark several miles away, destroyed a two story, seven room house.

SANFORD D. DEWEY

Chief J. Ray Pence Dies

The death of Chief J. Ray Pence, for thirteen years chief of the Stillwater, Oklahoma, Fire Department, is mourned by the fire service to which he had contributed so much.

Chief Pence who was so often portrayed as the ideal alert, progressive fire chief, inaugurated many innovations during his career as a fireman. He started that career at Healdton, Oklahoma, where he organized his own volunteer department with the aid of several oil companies. He became chief of the first city-financed department in that municipality in 1926. In 1931, when the chief of the Stillwater Fire Department retired, the post was offered to Chief Pence, who accepted it.

In the years following, he advanced that department to an enviable peak of prominence in the nation's fire service. At the same time he was instrumental in establishing in Stillwater, the only firemanship training course on a college or university campus in the world offering college credit—a course that is today housed in its own modern building on the campus of Oklahoma A & M College. This was known as the "West Point of Firemanship." His experiments at using college students in municipal fire fighting are still talked about.

Chief Pence was active in various fire service organizations. He was president of the Oklahoma State Firemen's Association, the Oklahoma State Fire Chiefs Association and the Southwestern Association of Fire Chiefs; he also served as secretary-treasurer of the last-named and was active in affairs of the International Association of Fire Chiefs.

His faithful service and generous contributions in the field of firemanship will long remain as a fitting epitaph.

Miniature Steamer for N.Y.F.D. Museum

The latest addition to the New York Fire Department's Museum, now totaling thirty-six pieces, is a replica of a steam fire engine of the vintage of 1894. The Museum is in the Fire College in Long Island City.

The model is to scale of one-eighth and was made in two years by Fireman Walter F. Beatty who is on the staff of Assistant Chief John J. T. Waldron, the dean of the faculty. Fireman Beatty has been in the department since 1925. Prior to donning the blue he was a commercial aviator for seven years and is an all-around mechanic and craftsman of sorts. He was general technician and art director of the Fire Department's exhibit at the World's Fair 1939-40.

The model weighs 37 pounds. All parts of the model are workable excepting the boiler. Some of the exhibits in the Museum date as far back as 1821. They include a lot of memorabilia. Even wooden water mains of pre-Civil War days. The number on the hydrant in the picture is the size of the water main.

JERRY DALY

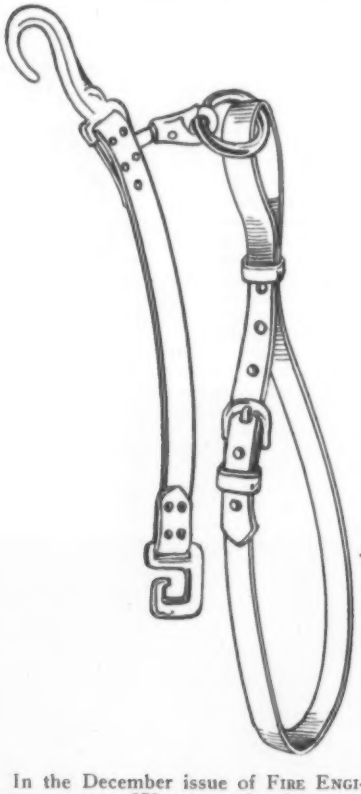
A New Addition to the New York Fire Department Museum

SHORT CUTS AND GADGETS

FIREMEN'S UTILITY BELT

In the December, 1944, issue of FIRE ENGINEERING *we told about a general utility belt which one of our scouts had seen in use on the Pacific Coast. We hinted we would like to know more about it—its uses, construction and so on.*

Comes the reply, in the form of a contribution from Lieutenant Christian Hayes of the San Francisco Fire Department.



In the December issue of FIRE ENGINEERING, page 878, you make the statement that you would welcome description of, and the various uses to which our general utility straps are employed. I shall endeavor to answer your questions.

NAME OF STRAP:

Fireman's Hose and Ladder Strap.

DESCRIPTION OF STRAP:

It is not one strap but in reality it is two straps. The primary strap is approximately 60 inches in length, and when the ends are buckled together it forms a double strap about 30 inches long. Attached to this main strap is a leather "keeper" which is adjustable. There is also attached a metal ring about 2½ inches in diameter, and one harness snap 3¾ inches long. The metal ring and the harness snap always rest in the bight of the strap.

The secondary strap is about 18 inches long. On one end is attached a metal hook and a harness snap. The metal hook is 6 inches long and the mouth of the hook is 1¾ inches wide. The harness snap is 3¾ inches long. On the other end of the strap is a square shaped hook so formed that it hooks back onto the strap of which it is a part. This hook is 3 inches long by 2 inches wide. It has a small opening on one side through which the strap is roved when using it as a hose strap. Both straps are 1¼ inches wide, by 3/16 inches in thickness. They are made from the finest grain leather, free from defects. These two straps are joined together to form one continuous strap. They are joined together by the harness snap on the shorter strap being snapped onto the metal ring attached to longer strap.

USES TO WHICH EMPLOYED:

To take hose lines up ladders or take them down when picking up. To hold hose lines when pouring it on, this eliminates the use of hose handles in this operation and in our opinion they are a great improvement as the line's reaction is taken up by the hoseman's shoulder, thus allowing him the use of his hands to guide the stream, or in the case of operating from a ladder, the use of his hands to hang on with.

The strap is attached to the hose by bending the shorter strap around the hose and attaching it by placing the strap through the square hook. This hook allows the strap to slide through it to compensate for the increased diameter of the hose when the line is charged. Thus it may be seen that the strap can be attached or detached almost instantly. There is absolutely no binding of the strap on the hose.

When playing the stream from a flat surface with the aid of these straps, after attaching the short strap to the hose the long strap is placed over the arm and shoulder of the hoseman on the side away from the hose line. This is a safety precaution taken to insure that the man on the line can get away from it in case the need arises. All the man has to do is to swing around away from the line and the strap will fall from his shoulder.

On the older aerial trucks we do not have any ladder pipes, so when using these as a water tower, we place our lines in position with these straps. We accomplish this by attaching the short strap to the hose about 18 inches back of the butt to which the pipe is attached. Then we hook the 6 inch metal hook over the rung above the point where we desire to place the pipe, then we place the rest of the strap in front of and over the same rung where the hook is placed, take a couple of turns around the rung and then secure it by snapping the harness snap on the long strap into the metal ring which is on the same strap. As may readily be seen, there is no danger of the line getting away when secured in this manner.

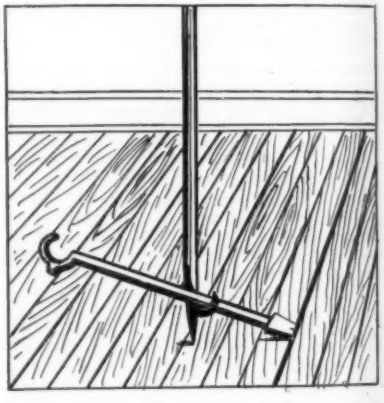
Another important use of this strap is that of rescue. An unconscious person may be rescued without much difficulty with these straps. This is accomplished by putting the unconscious person on his back and placing the strap over his head and shoulders to just below his armpits. Then the rescuer brings the person to his knees and then places his own head and one arm and shoulder through the loop of the strap. The rescuer can then descend a ladder with no trouble as he has the full use of his hands, while the strap securely holds the unconscious person to the back of the rescuer.

The uses to which the strap can be put are innumerable, and are limited only by the ingenuity of the individual.

* * *

GIVING A CLAW TOOL A "LIFT"

When working with fire department tools, particularly with a claw tool or



bar, and more leverage is desired, a six foot hook may be used as a fulcrum to provide that extra leverage, as shown by the illustration. LIEUT. W. J. C.

* * *

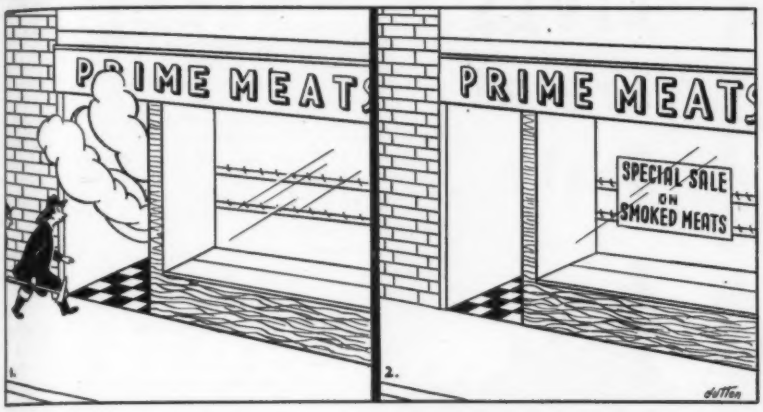
WHEN WATER IS NOT NEEDED

From Herbert A. Howson of Bronxville, N. Y., comes this one.

"We understand that the fire department at Deposit, N. Y., has a fire district extending several miles in each direction from the fire house and that one point which they have to cover is a settlement around Lake Deposit four miles from the fire house. The last mile and a half leading to this settlement is up a steep hill. One pumper which responds to this area is a 500-gallon pump carrying 1200 feet of 2½-inch hose and some smaller hose, as well as a 500-gallon booster tank.

"Noting that all the houses at this Lake Deposit settlement are near a water supply and that the 500 gallons of water makes quite a heavy load, the department has installed a large dump valve on the bottom of the booster tank. When they get a call for the Lake Deposit section, they open the valve and drop the entire water load as soon as they leave the fire house. It has been estimated that dropping this load of water increases the speed of the truck approximately 'one gear.'"

FALSE ALARMS



Effective

A sad-looking man went into a druggist's shop.

"Can you give me," he asked, "something that will drive from my mind the though of sorrow and bitter recollection?"

The druggist nodded. He put him up a dose of quinine, and wormwood, and rhubarb, and Epsom salts, with a dash of castor oil, and gave it to him. And for a week the man could thing of nothing in the world except new schemes for getting the taste out of his mouth.

The hospital was chronically short of help, and the nurse's aide who timidly entered a patient's room one evening was an obvious novice.

"They said to get you ready for bed," she began, "What am I supposed to do?"

"Perfectly simple," the patient replied. "You fluff up my pillow, rub my back with alcohol and then kiss me goodnight."

The young miss followed the routine faithfully and to the complete satisfaction of her patient. But at the door she paused and pondered. "That last part," she reflected, "I'll bet I wasn't supposed to do that at all."

Fair Exchange

Two ex-sailors had been partners in business for thirty years. But now the partnership was about to be dissolved. One of them lay dying. The sufferer called his friend to his bedside.

"Suffering Sailor: "I know I haven't much longer to live, old man. Before I go I've got a confession to make. During the years of our partnership I've swindled you out of thousands of dollars. Can you forgive me?"

Well Sailor: "That's all right. I poisoned you."

1st Fireman: "Who the devil put the pumper in that way?"

2nd Fireman: "The Captain did."

1st Fireman: "Just the right position, isn't it?"

Reason

A young man who had just been drafted was being examined. The psychiatrist's assistant asked the routine question:

"Do you go out with girls?"

The draftee shook his head and answered firmly:

"No."

The assistant called the chief psychiatrist who repeated the question. Again the draftee answered firmly:

"NO!"

"Why don't you go out with girls?" the doctor asked.

"Because," answered the draftee, "my wife won't let me."

The chap who joined the nudist club was telling about the first meeting. "They were all sensationally nude," he said, "even the butler who took my hat and stick." Asked how he knew it was the butler, the chap snapped, "Dammit; I know it wasn't the maid."

Intent upon joining the Air Force and earning his wings, the young man rushed over to the recruiting office to enlist.

"We'll have to ask you a few questions," began the officer in charge. "First off, do you gamble?"

"No, Sir."

"Do you drink?"

"No, Sir."

"Do you smoke or swear?"

"No, Sir."

"Do you go out with women?"

"No, Sir."

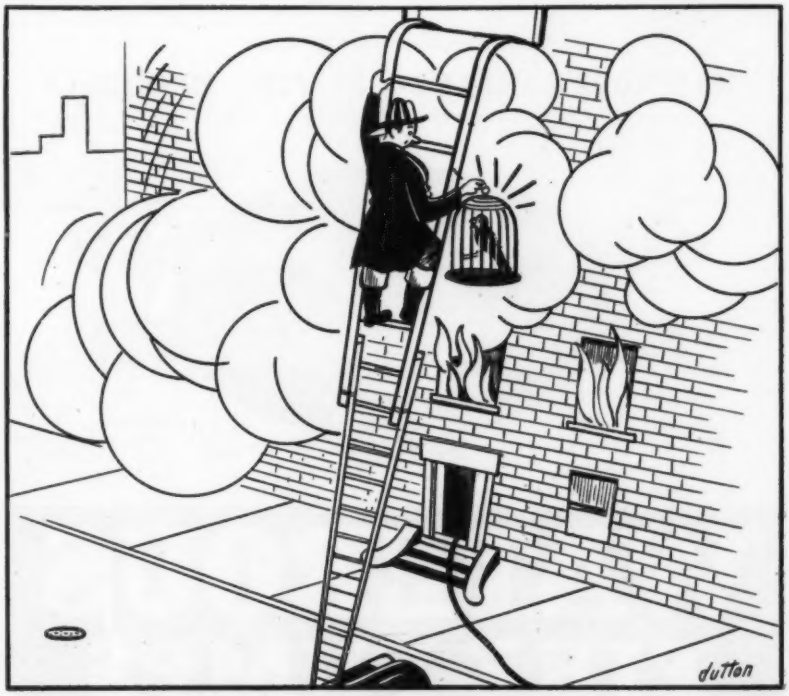
The officer sat back and looked the young man over carefully. "What do you want with wings?" he asked at length. "You already have them."

Dorothy arrived at her grandmother's home wearing a very fashionable and very backless evening gown.

Said grandmother: "It's shameful. I hate to think what your mother would say if she saw you in that dress."

Said Dorothy: "So do I, because it's hers."

Then there's the one about the butcher who backed into the meat grinder and got a little behind in his orders.



"I'd Feel a Lot Safer if You'd Let Me Fly Down!"

Photo by Frederick Lewis

You Can Depend on a WATEROUS

Dependability of WATEROUS Fire Pumps is a result of inbuilt quality. If you will permit us to show you how these pumps are built, we are confident that you will specify WATEROUS on your next fire fighting apparatus.

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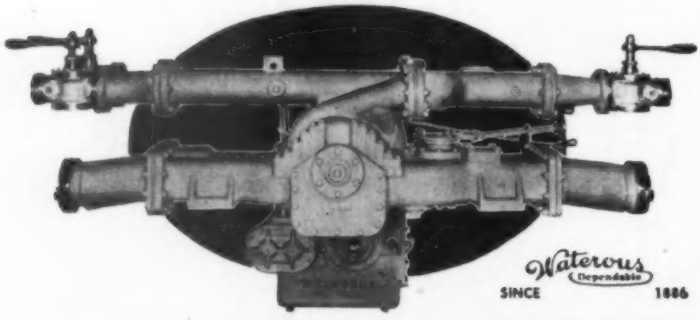


WATEROUS FIRE PUMPS

Coast Guard Fire Tests

(*Continued from page* 167)

of the test amounted to approximately 2,500 gallons. The major part of the 6,954 gallons of water used to control and extinguish the fire was converted into steam which escaped from the engine room by way of the opening between the stack and the stack casing.

18. The nature of the burning within the engine room was different from that which occurred during Test Fire No. 5. The difference was due to the control of the air flow at the grilled opening from the second deck passage into the Engineer's Storeroom. This opening has a cross sectional area of 10.5 square feet and is the major air intake opening during a fire in the engine room. The total cross sectional area of the six main ventilators is 25.9 square feet. The grilled opening was closed previous to the start of test and remained closed during the entire test. This restricted the flow of air which was allowed to enter the space during the fire. As a result, the fire did not burn as freely as it did in Test Fire No. 5. It is apparent that the difference in the nature of burning, the degree of temperature attained, and the difficulty of controlling and extinguishing the fire during the previous test, was due to this one factor.

19. Ten hundred and forty-five temperature readings were recorded during this test.

V. Conditions After Test—

1. The engineroom was in practically the same condition as reported after Test Fire No. 5 conducted 23 October, 1944 with the following changes:

a. All surfaces are coated with carbon except where washed clean by water fog.

b. Floor plates, near forward end of engine, are extremely warped.

2. It was estimated by measurement before and after test, that not more than 500 gallons of oil were consumed during the test.

VI. Tentative Conclusions—

1. A major fire involving fuel oil under the floor plates can be extinguished by the control of air flows and the use of low velocity waterfog applied from the upper level.

Remarks: The use of low velocity water fog to control and extinguish an oil fire within a confined space, with all intake openings closed, introduces a new theory in the employment of water fog. This method utilizes the convectional currents developed within the space to carry the water, which is in the form of mist, to the base of the fire. Extinguishment of the fire and the cooling of the heated metal throughout the space are effected without direct application or equal distribution of the water fog. If, by future tests, this theory can be definitely established as a practical method, it offers a simple and effective answer to the problem of controlling and extinguishing fires of this nature.

2. The specially designed covers used on the main ventilators provide a more positive control of air flows at these openings than the six by six foot squares of canvas used during previous tests.

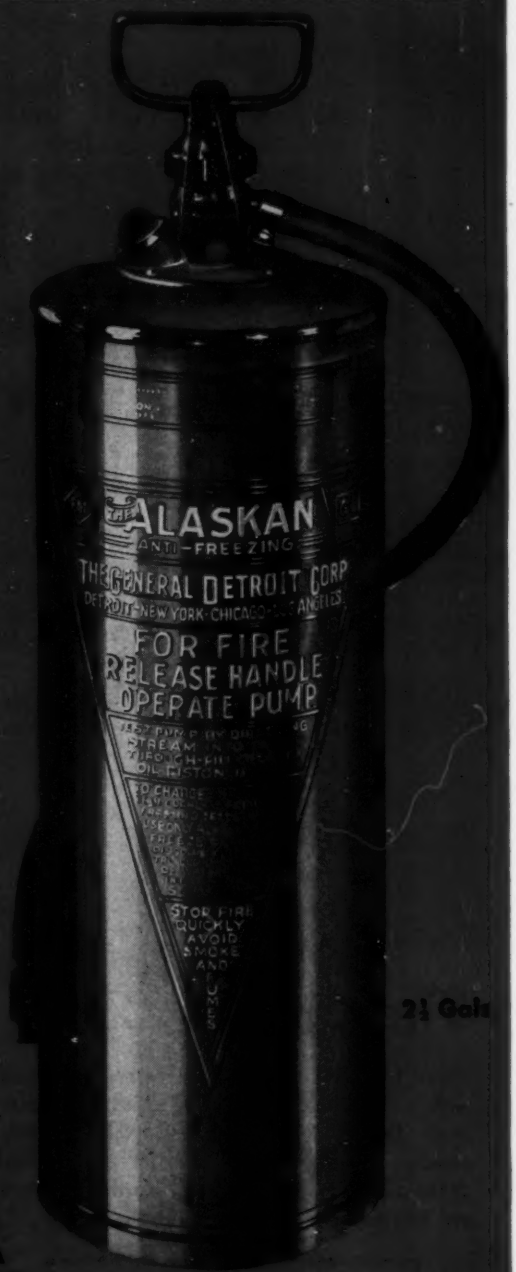
Editor's Note: See the April issue for *third installment of Commander Layman's tests.*

Alaskan

PUMP TYPE EXTINGUISHER

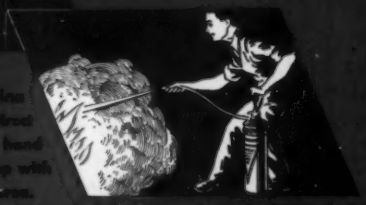
DROWNS FIRE

Approved for Class A* fires — protects 2,500 square feet of floor space. Double acting pump — equipped with patented Safety Phlare — throws a steady stream of water up to 45 feet. Alaskan Pump Type Extinguisher operates perfectly in temperatures as low as 45° below zero when used with anti-freeze charge.



WHERE TO USE ALASKAN

*Underwriters' approved for Class A fires — wood, textiles, paper, rubbish, and similar materials.



Hold extinguisher first with foot pedal. Direct nozzle with one hand and operate pump with other. Drench area.

HOW TO USE ALASKAN

IF IT'S GENERAL IT'S DEPENDABLE

FREE Two-color poster of above suitable for wall mounting. Also — General's new splender featuring Norman Rockwell's illustration of the Great Chicago Fire. Write Detroit office.

Let General Protectioneers prescribe the right extinguisher for your every fire hazard.

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COMBINATION SUIT

The Coat . . .

Midwestern's No. 101 Fireman's coat is highly serviceable and popular in the larger municipal departments throughout the country. Flexible elastic inner sleeve for wrist to keep out water, cold and sparks; adjustable collar strap, detachable wool lining, Midwestern Safety snaps, two outside pockets, 6-inch storm flap and many other fine Midwestern qualities.

The Pants . . .

These Midwestern Bunker Pants are equipped with a removable wool lining which has safety snaps that cannot catch on anything. Sturdy construction, reinforced crotch for pole sliding. These pants together with coat illustrated above are Midwestern's outfit No. 101.

REGULAR FIREMAN'S BOOTS NOW AVAILABLE

Fireman's boots ¾ length, reinforced instep, felt linings. Do not confuse these boots with reclaimed boots which have been offered firemen for past 2 years. These are regular fireman's boots made of the new synthetic rubber. Write.

MIDWESTERN MFG. CO.

MACKINAW, ILL.

See your local Midwestern distributor for prices and literature, or write the factory.

Flame Proofing

(*Continued from page* 170)

places, provided certain conditions are met. For example, all such decorations and all materials used in conjunction with them must be properly flameproofed and an affidavit must be forwarded to the Division of Fire Prevention, New York Fire Department, signed by the flameproofing concern doing the work.

Flameproofing Tests

A discussion of flameproofing would not be complete without some consideration of flameproofing tests. Methods for testing materials in order to determine whether or not they are sufficiently fire-resistant are very difficult to devise. There are so many factors to be considered by such a test, such as for example the type of material, the use to which it is to be put, and so forth. Thus, to design a test which would indicate whether or not a material were properly flameproofed and which could apply equally well in all cases would hardly be feasible. However, various tests do exist which will indicate whether or not a substance has been flameproofed at all and approximately to what degree. Perhaps the best known of these is the vertical test of the U. S. Government (Spec. CCC-D-746). The National Bureau of Standards and the National Fire Protection Association have tests with identical requirements

The requirements of the vertical test are relatively simple. A sample of the material 2" wide and 12½" long is suspended vertically over and in contact with a bunsen burner flame for 12 seconds. The rate of any burning which takes place within the specimen and the amount of charring are then interpreted to indicate the degree of flameproofing.

In New York City, the Board of Standards & Appeals has laid down definite rules regarding tests for fire-resistive, flameproofed materials. These tests are approximately the same as the ones just described.

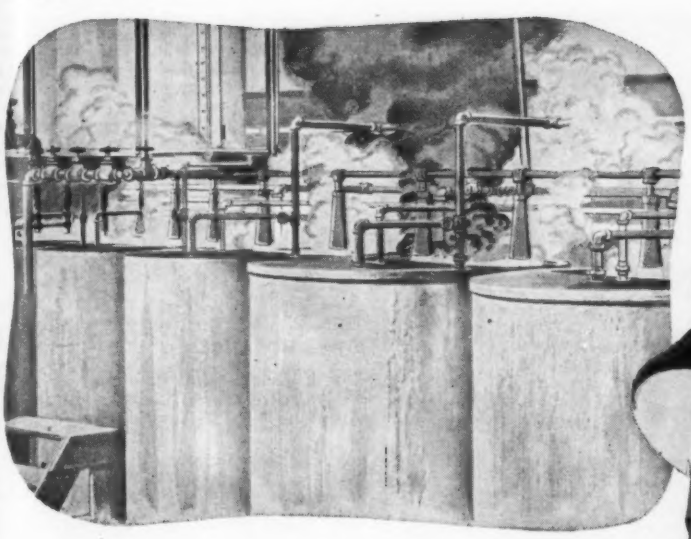
A very rough test but one which may nevertheless prove valuable under certain circumstances is the following:

Select a sample of the material to be tested, hold same vertically above a match flame and in direct contact with it for 10 seconds. The material may be regarded as flameproof if it does not flash or glow. Charring may be overlooked. Flashing confined to bad edges or fuzz may be disregarded as may also glow which is confined to the charred area.

Although this test is extremely crude, it could prove helpful to firemen and others charged with inspection duties. For example, an inspector at a theatre could unobtrusively select a leaf or rosepetal from back-stage scenery and then by applying this test quickly determine whether the management had made any attempt at flameproofing.

The applications of chemistry to flameproofing is but one example of the many practical relationships which exist between chemical science and fire-fighting.

Modern flameproofing techniques are a boon to fire prevention but they are not to be regarded as a panacea. Old flameproofing processes have still to be improved and new superior flameproofing agents have still to be discovered.



LIKE SNUFFING OUT A CANDLE

●Just a *hint* of a blaze in a flammable liquid ..and a Kidde built-in system goes into action fast. A blanket of carbon dioxide covers it like a candle-snuffer...out goes the flame before it can spread!

Fast fire-killing is just *part* of the Kidde method. The "after it's out" advantages are equally outstanding. The dry, inert gas leaves no mess to be cleaned up—keeps the liquids themselves *uncontaminated, undiluted.*

Against electrical fires, Kidde systems are equally fast, equally safe. *Fast,* because carbon dioxide quickly penetrates wiring and windings. *Safe,* because there's no water-soaking of equipment or rotting of insulation.

Class B fires in flammable liquids, Class C blazes in electrical equipment... these are the *tough* fires to fight. The ones against which ordinary water-type extinguishers are useless. *But* the ones for which underwriters specifically approve Kidde equipment.

Before one of these hard-to-fight fires gets a chance to damage your plant, study the accompanying list of danger points. Then ask a Kidde representative how best to protect them.

Kidde Kills Tough Fires

PROCESS ROOMS
OVENS
SPREADERS
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STORAGE ROOMS
MIXERS
COATERS
TRANSFORMERS
DIP TANKS
AGITATORS
WASHING TRAYS
CONTROL PANELS

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Long-wearing boots with wood "Ladder Shanks" to reinforce arches. Wide guards at shank, for protection against punctures. Black slip-proof soles. Inside and outside gum knee patch.

GOODALL "SSS" FIRE COAT

The firemen's favorite. Durable dull finish black rubber. Lightweight, "roomy," comfortable. Corduroy band collar, square shoulders, strap-and-buckle on sleeves. Length, 46". Sizes, 34 to 46.

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Factory—Trenton, N. J. (Est. 1870) 75 Years of "Know How"—Our Most Valuable Commodity

Serious consideration would seem to indicate a very definite need for further scientific investigation in the form of chemical experimentation and research for although hundreds of patents have been issued, the leading flameproofing chemicals are still the same substances that our ancestors knew about—the familiar aluminum and ammonium salts.

Commissioner W. A. Reilly Resigns

Fire Commissioner William Arthur Reilly of Boston has resigned from the Department, effective February 28, 1945 for the purpose of assuming a position in the service of the Commonwealth of Massachusetts as Chairman of the Metropolitan District Commission.

William Arthur Reilly

In his new position, Fire Commissioner Reilly replaces former Fire Commissioner Eugene Hultman and he will assume charge of the extensive water supply system, park system, recreational facilities and police force of the M.D.C. The Metropolitan District embraces the City of Boston and approximately 40 cities and towns in the adjoining area.

Commissioner Reilly served as Fire Commissioner of the City of Boston from January 4, 1938 up to the present time and his service was marked by many improvements of a permanent character in the Fire Department organization and allied services under his jurisdiction.

Circus Aftermaths

Six key men of the Ringling Brothers, Barnum & Bailey Combined Shows, Inc., were sentenced late in February to prison or jail for their responsibility in the fire which took the lives of 168 persons last July 6. The charge against them was involuntary manslaughter, to which they had pleaded nolo contendere. The sentences of all but one were immediately stayed to permit the show to open this year.

The five who received stays were: James A. Haley, vice president and director, one to five years in prison; George W. Smith, general manager, and Leonard S. Aylesworth, from two to seven years in prison each; Edward R.

Wartime Life Guards

WITH A PEACEFUL FUTURE

SCOTT *Air-Pak* EQUIPMENT

★ **Here, in principle, is the forerunner of safety equipment which in the near future will dependably serve many industries. Scott *Air-Pak* (Portable Oxygen) outfits are today serving our fighters at extreme altitudes—where oxygen failure means death in a matter of minutes. These fighting men's lives depend upon the oxygen Scott equipment feeds them.**

Soon industry will benefit from experience gained by Scott engineers in designing and building such life-guarding apparatus. Yes, soon portable breathing equipment—embodying Scott reliability—will be available for peace-time protection wherever the need for *complete* respiratory protection is imperative.

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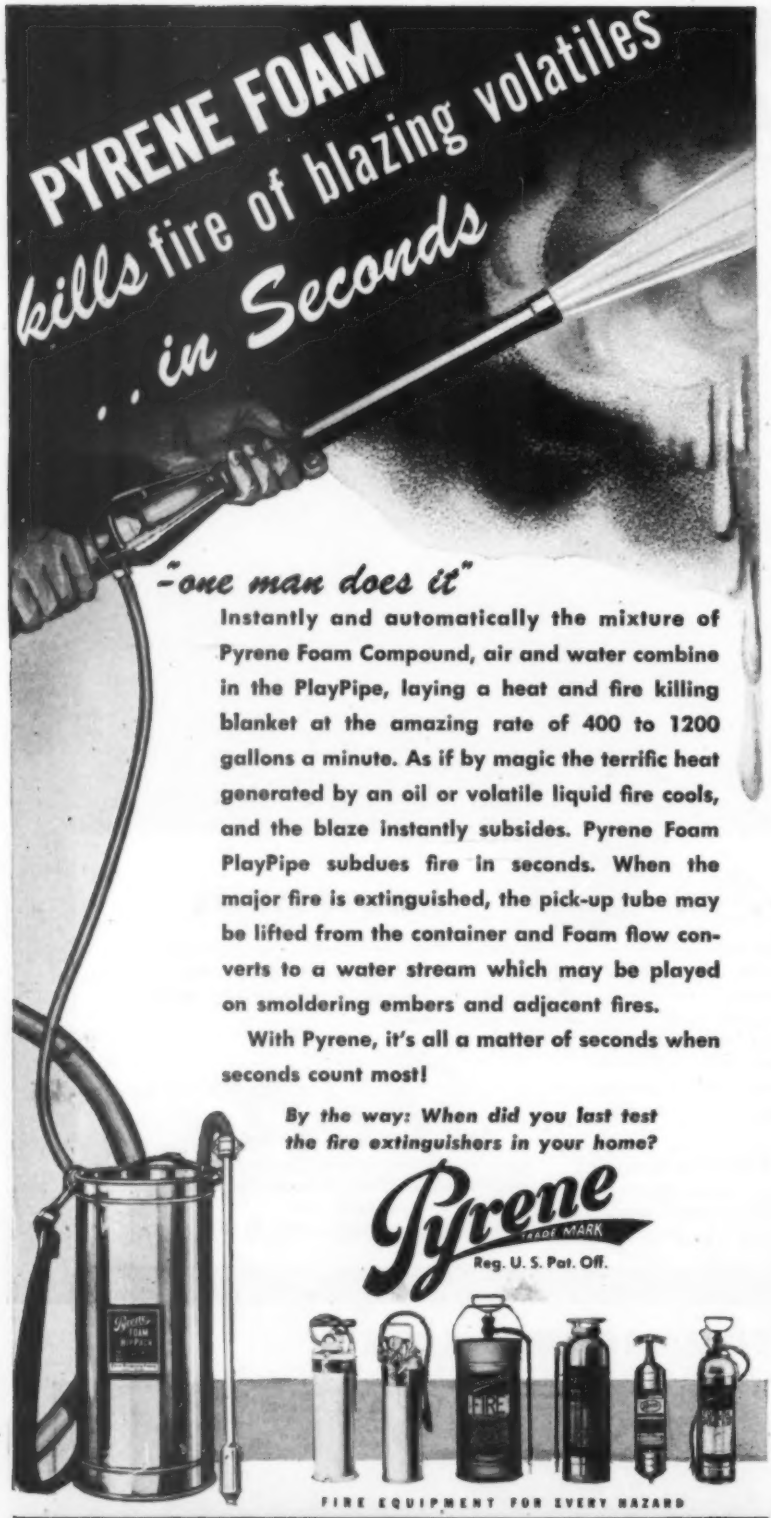
FOR TOMORROW'S SAFETY

Deadly coal gas will hold no terrors for the miner protected by the Scott Air-Pak.

Firemen protected by Scott Air-Pak will work fast, efficiently despite smoke and fumes.

Maintenance of gas storage tanks will be easier and more economical with workmen

PYRENE FOAM
kills fire of blazing volatiles
. . . in Seconds



"one man does it"

Instantly and automatically the mixture of Pyrene Foam Compound, air and water combine in the PlayPipe, laying a heat and fire killing blanket at the amazing rate of 400 to 1200 gallons a minute. As if by magic the terrific heat generated by an oil or volatile liquid fire cools, and the blaze instantly subsides. Pyrene Foam PlayPipe subdues fire in seconds. When the major fire is extinguished, the pick-up tube may be lifted from the container and Foam flow converts to a water stream which may be played on smoldering embers and adjacent fires.

With Pyrene, it's all a matter of seconds when seconds count most!

By the way: When did you last test the fire extinguishers in your home?

Pyrene TRADE MARK
Reg. U. S. Pat. Off.

FIRE EQUIPMENT FOR EVERY HAZARD

Pyrene Manufacturing Company
Founded 1907
NEWARK 8, NEW JERSEY
AFFILIATED WITH C-O-TWO FIRE EQUIPMENT CO.

FIRE ENGINEERING INDEX

The index to Volume 97, FIRE ENGINEERING, is now available, and will be mailed to those who request a copy.

Versteeg, chief electrician, and William Caley, chief seatman, one year in jail each. David W. Blanchfield, chief truckman, sentenced to six months in jail, did not ask a stay and started to serve his sentence immediately.

The corporation itself was fined $10,000. The five who received stays were ordered to appear before Hartford jurists on April 6, two days after the circus is scheduled to open for the season at Madison Square Garden, New York. The delay was to permit the men to finish the job of rebuilding the equipment so that the show could be put on the road this year and thus meet the claims against it.

It is unofficially stated that death and injury claims from the fire will total about $5,000,000 and that awards of about $3,000,000 will be made in settlement. As of February 19, 1945, awards amounting to $294,000 to the estates of thirty persons who died in the fire were announced by arbitrators, bringing the total thus far to $751,575.

Meanwhile, it is learned that a number of cities will hang up the "NO SMOKING" signs under the Big Top when the circus fills engagements in those municipalities.

Manufacturers' Announcements

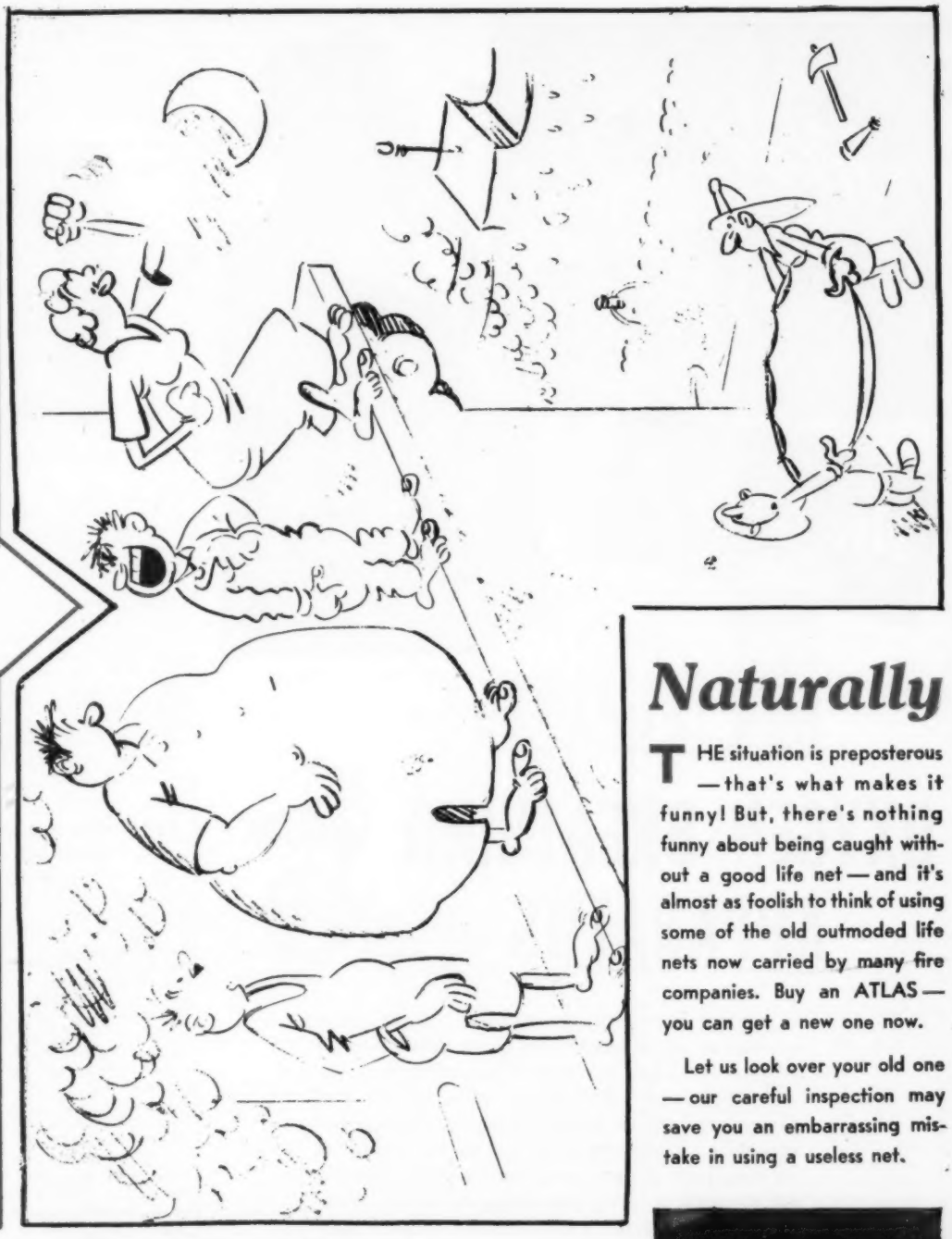
Fleming Now Vice-President of National Foam

Hart H. Fleming, a director of National Foam System, Inc., Philadelphia, for 15 years, has assumed the vice presidency of the company.

Hart H. Fleming

Mr. Fleming, since graduating from the University of Michigan in 1917, has engaged in many diversified activities in the oil industry, including extensive reconstruction work in Rumania after the last war, design, construction and operation of refineries in America and abroad, and development work with the Standard Oil Development Company, all on behalf of Standard Oil of New Jersey.

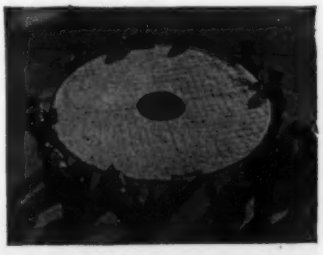
Hey—You Jump Last!



Naturally

THE situation is preposterous—that's what makes it funny! But, there's nothing funny about being caught without a good life net—and it's almost as foolish to think of using some of the old outmoded life nets now carried by many fire companies. Buy an ATLAS—you can get a new one now.

Let us look over your old one—our careful inspection may save you an embarrassing mistake in using a useless net.



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Specify ATLAS on new apparatus

ATLAS SAFETY EQUIPMENT CO., Inc.

26 WARREN STREET★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ NEW YORK 7, N. Y.

Please mention FIRE ENGINEERING *when writing advertisers*

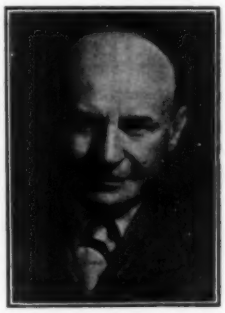
OXYGEN BREATHING APPARATUS

In fighting fires in enclosed areas, where heavy concentrations of smoke and gases combine with oxygen deficiency to make the atmosphere unbreathable, your men's lives are protected and efficiency maintained when they use this time-proved Apparatus. Providing a full 60-minute supply of self-contained oxygen, even during great exertion and consequent heavy breathing, the M.S.A. One-hour Oxygen Breathing Apparatus is compact, light in weight, features the All-Vision Gas Mask-type Facepiece for wide-angled vision with snug-fitting comfort. Write for your copy of descriptive Bulletin BM-6 —and ask for a demonstration at your convenience.

MINE SAFETY APPLIANCES COMPANY
BRADDOCK, THOMAS AND MEADE STREETS
PITTSBURGH 8, PENNA.

New Duties for Wunderlich

Norman E. Wunderlich, Sales Manager of the Communications Division, Galvin Manufacturing (Motorola Radio) Corporation, Chicago, Ill., will now direct all sales for radio equipment and systems for the railways, fire and police departments, public utilities, marine, taxicabs and industrial concerns.



Norman E. Wunderlich

Mr. Wunderlich joined the Galvin concern in 1939 as radio cousultant and a year later advanced to head of the communications division. Under his management, the company has greatly expanded its activities in the A-M and F-M radiotelephone field, increasing its installations from the initial A-M State Police radio telephone system to well over 5000-A-M and F-M installations of two and three-way radio-telephone systems for Police and Fire Services in twenty-six states.

Buffalo Fire Appliance Corporation Has Golden Anniversary

The Buffalo Fire Appliance Corporation, Buffalo, N. Y., is this year celebrating its fiftieth year in business.

Starting in the year 1895 in a small loft space at 15 Wells Street in Buffalo, the company within a very few years had become an important manufacturer of fire extinguishers and its products were distributed by mill supply houses and wholesale hardward companies throughout the United States.

In 1916 when horse-drawn fire apparatus was rapidly disappearing from many city fire departments, the company entered the manufacture of motor driven fire apparatus.

The company was founded by Mr. George R. Stephens who carried on as the active head of the business until his death in 1938. Since that time the company has been under the management of Charles H. Stephens, a son of the founder, and now president of the company.

Since Pearl Harbor, the company has been engaged very heavily in war work while at the same time perfecting new developments which will be offered for better fire protection after the war.

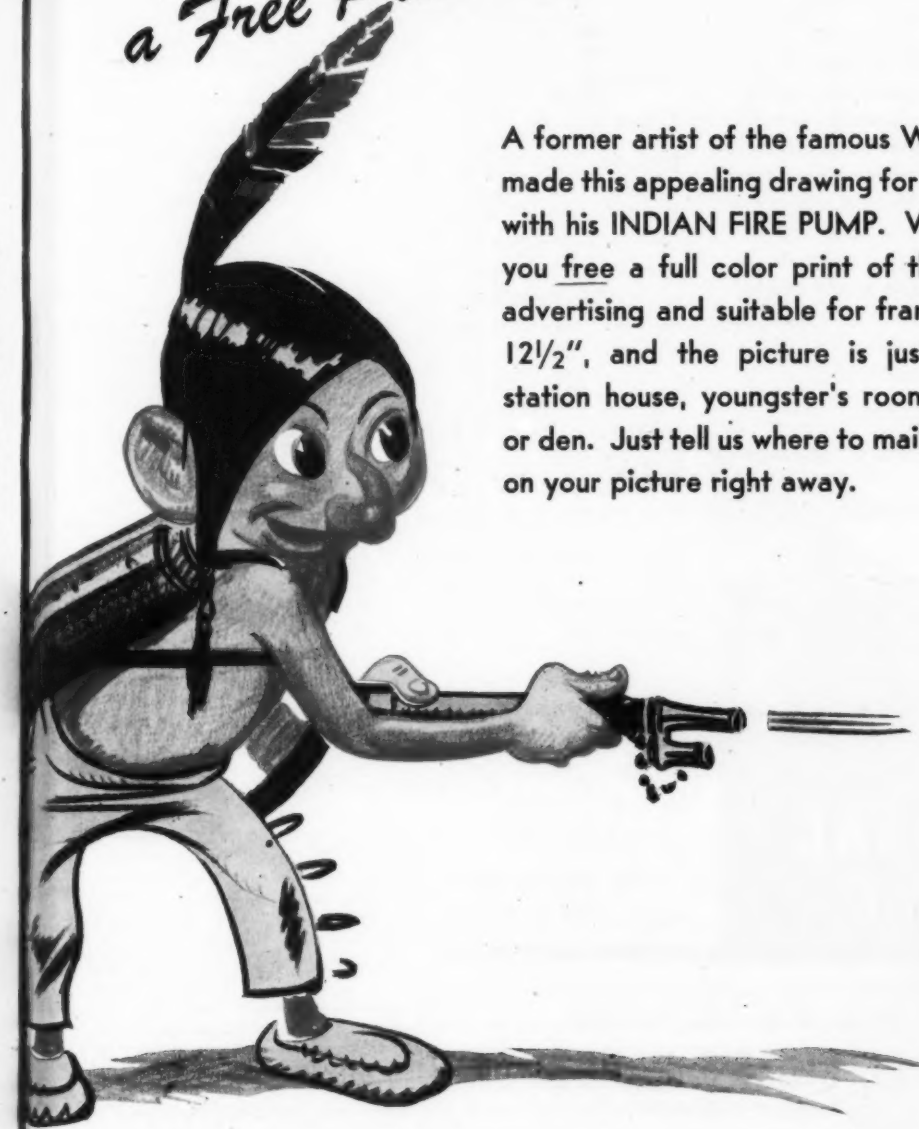
To properly commemorate the event the Buffalo Fire Appliance Corporation has released a booklet entitled "Fifty Years of Experience."

New Catalog Available

The General Pacific Corporation has just published a new catalog, called "The Buyer's Encyclopedia."

Complete data is included on alarms

We Want to Send You a Free Print of this INDIAN Drawing!



A former artist of the famous Walt Disney Studios made this appealing drawing for us of an Indian boy with his INDIAN FIRE PUMP. We will gladly send you free a full color print of this picture without advertising and suitable for framing. Size is 11" x 12½", and the picture is just the thing for a station house, youngster's room, recreation room or den. Just tell us where to mail it and we will send on your picture right away.

"Splendid Service"

D. B. Smith & Co.
Utica, N. Y.

Please send us one INDIAN FIRE PUMP. We have had INDIAN FIRE PUMPS that have been in service for three years and they have given us *splendid service* during that period. We like them very much.

Your truly,
Shawnee Fire Dept.
J. Carnie Jones, Fire Chief

With warm weather just around the corner, now is none too soon to order INDIAN FIRE PUMPS. Remember clear water alone—no chemicals—does the fire fighting job. If you do not already have a copy of our catalog we suggest you send for it today.

FOR INSIDE AND OUTSIDE FIRES USE

INDIAN

Clear Water

FIRE PUMPS

D. B. SMITH & CO.

406 Main St., UTICA 2, NEW YORK

PACIFIC COAST BRANCHES:

Hendrick Equipment & Supply Co., 435 Brannan St., San Francisco, Cal.
C. Earle Co. Clyde-Garrett Co. The Cowell Co. Mill & Mine Supply

Here's the

Quicker, Safer Way to Put Out Fires

The Universal Nozzle provides the *quicker* way to put out fires because the hoseman can change the type of stream in an instant for any sudden change in fire conditions. The Universal Nozzle provides the *safer* way to put out fires because it can put a 130 degree water curtain between the hoseman and the flames . . . also in an instant . . . while retaining a solid stream, if desired. The Universal is the versatile nozzle, proved by seven years of actual use under all conceivable conditions.

Solid Stream • Fog • Water Curtain
or Any Combination
with

The UNIVERSAL NOZZLE

Satisfied Users Include

The U. S. Army and Navy at their air stations, the U. S. Coast Guard on its vessels, in addition to industries and municipal fire departments everywhere.

Write for Details

Inquiries about this remarkable nozzle are invited. Dealers, industries, and fire departments will be sent full details without any obligation.

L. N. CURTIS & SONS
Emergency Equipment
451 Hudson St.
OAKLAND 9, CALIF.

485 Pages
Profusely Illustrated

Bible of the Fire Service

THE FIRE CHIEF'S HANDBOOK
By FRED SHEPPERD

Gives a practical, authoritative answer to almost every question that might come up in modern fire fighting practice.

A valuable reference guide for the progressive fire chief, and for the fire fighter studying for promotion.

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Case-Shepperd-Mann Publishing Corp.
24 West 40th St., New York 18, N. Y.

and sirens, fire extinguishers, motor fire apparatus, and allied products, as well as safety clothing and equipment, pole and first aid equipment, and a variety of items suitable for industrial maintenance.

The new publication also incorporates practical information, such as the sections on hose threads, nozzles and fire streams, fire hose maintenance, extinguishers, classification of fires, and pertinent facts on ladder use and care. The book is well illustrated and describes each product completely.

A free copy of this buying guide and reference manual may be obtained from The General Pacific Corporation, Dept. W, 1800 S. Hooper Avenue, Los Angeles 21, Cal.

Guided Portable Electric Megaphone

The Guided Radio Portable Electric Megaphone has been developed by Guided Radio Corporation, 161 Sixth Avenue, New York City, for police and fire service communications.

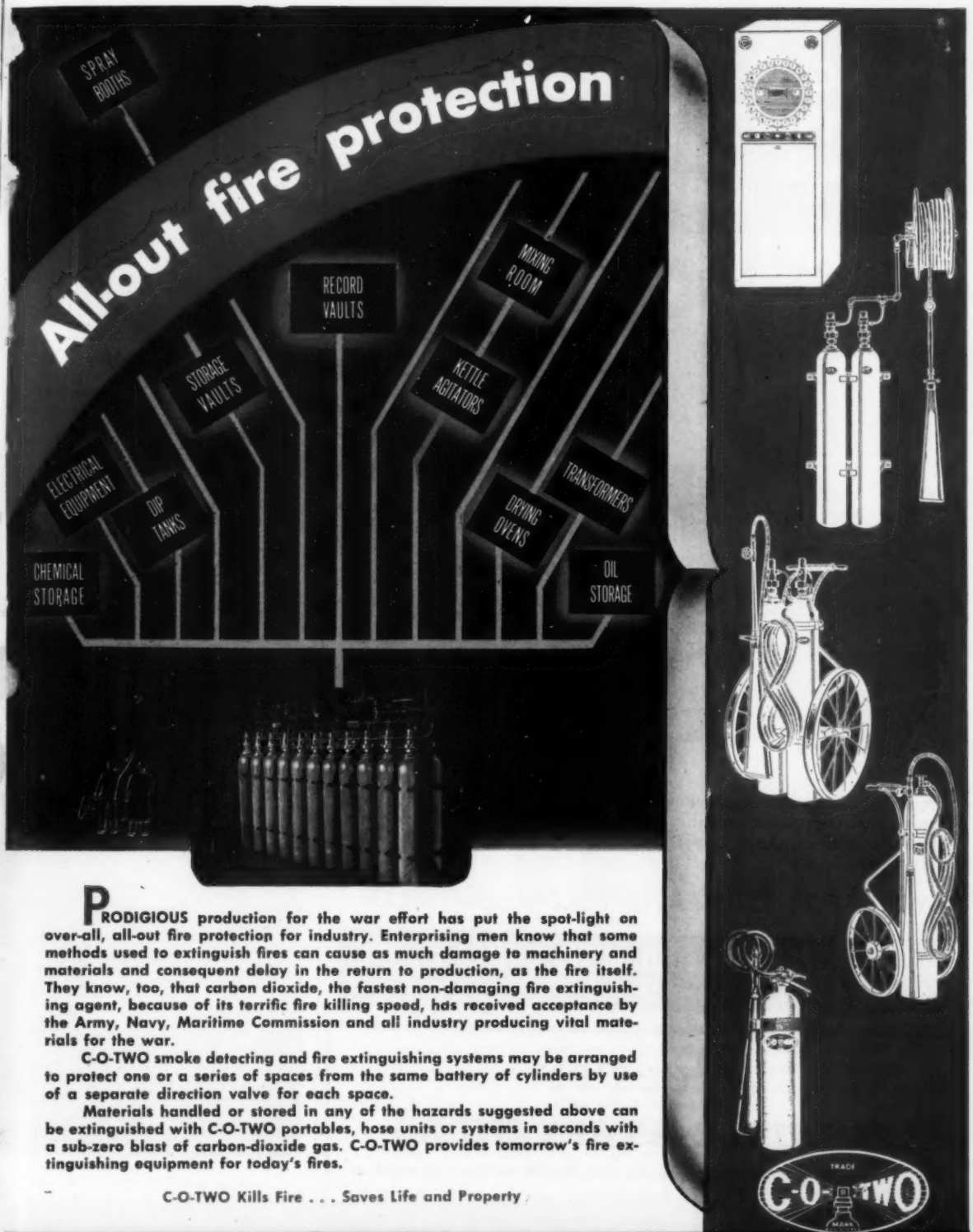
The device, which is understood to operate on the electronic amplification principle is compact and portable. Its primary purpose is to facilitate the transmission of orders and messages over considerable distances to men who may be operating on top of buildings, or on ladders. It should prove particularly valuable also wherever fireboats are operated.

It is reported that numbers of these "powered" megaphones are in use by the Armed Forces.

Middlekamp Joins Mack

Appointment of John H. Middlekamp, recently resigned director of the Automotive Division of the War Production Board, as manager of the Government Department of Mack Trucks, Inc., has been announced by C. T. Ruhf, president.

Mr. Middlekamp was director of the automotive division of WPB from Jan. 1, 1944 until his resignation Jan. 6 of



PRODIGIOUS production for the war effort has put the spot-light on over-all, all-out fire protection for industry. Enterprising men know that some methods used to extinguish fires can cause as much damage to machinery and materials and consequent delay in the return to production, as the fire itself. They know, too, that carbon dioxide, the fastest non-damaging fire extinguishing agent, because of its terrific fire killing speed, has received acceptance by the Army, Navy, Maritime Commission and all industry producing vital materials for the war.

C-O-TWO smoke detecting and fire extinguishing systems may be arranged to protect one or a series of spaces from the same battery of cylinders by use of a separate direction valve for each space.

Materials handled or stored in any of the hazards suggested above can be extinguished with C-O-TWO portables, hose units or systems in seconds with a sub-zero blast of carbon-dioxide gas. C-O-TWO provides tomorrow's fire extinguishing equipment for today's fires.

C-O-TWO Kills Fire . . . Saves Life and Property

C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK 1 NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada

AFFILIATED WITH PYRENE MANUFACTURING COMPANY

We shall appreciate your mentioning FIRE ENGINEERING *when writing advertisers*

ACME TYPE FD FULL VISION All-Purpose Gas Mask is APPROVED by the U. S. BUREAU of MINES

BUY MORE BONDS AND KEEP THEM

Combines Safety Comfort

FULL VISION

The wartime draft and enlistments have decreased the personnel of Fire Departments. Therefore, it becomes vitally necessary to provide essential firemen with the best Gas Mask equipment.

The Acme Type FD FULL VISION All-Purpose Gas Masks have the Wide, Flat Safety Glass Lenses which provide Non-Distorted FULL VISION, thereby increasing the safety and efficiency to firemen.

Another important feature with the Acme Mask is the Acme Canister which protects against Carbon Monoxide, Organic Vapors, Ammonia Fumes, Acid Gases, Toxic Smokes, Fumes, and Smoke Suffocation.

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ACME PROTECTION EQUIPMENT COMPANY, INC.
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LIBERTY AVENUE Cable Address ACMEPROCO PITTSBURGH, PA U S A

Reeves
Reg. U. S. Pat. Office

FLEXIBLE STRETCHERS

No. 101

Every casualty, no matter how slight or how serious, can be made worse by rough, improper handling. Reeves Stretchers can be used in the most inaccessible places.

If your dealer cannot supply you write to:

A. SMITH & SON, Inc.
1237-39 RIDGE AVE.
$14.50 PHILADELPHIA, PA.

this year. Prior to that he had spent a year and a half as a lieutenant colonel with the Army handling its truck production problems, resigning to join WPB.

John H. Middlekamp

He had been superintendent in charge of the surface lines equipment for the Brooklyn-Manhattan Transit Corp. for many years, and was brought into government service as a transportation expert in the Office of Production Management when that organization started to function immediately after the United States entered he war.

Mr. Middlekamp will continue as a consultant to WPB and will retain his chairmanship of the Truck Committee of the Combined Production Resources Board. He will make his headquarters in Mack's executive offices in New York's Empire State Building.

New Single Unit Flashlight Charger

A single unit charger for its recently introduced rechargeable wet flashlight storage battery, which can be operated from the ignition system of automobiles, trucks, etc. is announced by the B. F. Goodrich Company, Akron, Ohio.

The new auto charger can assure a flashlight battery at top charge at all times in fire trucks and cars. It is designed for easy attachment on the dash, cowl or other convenient place on the vehicle and so connected that it functions with the vehicle either running or idle. It is said to be easy to attach and operates on six volts and 12 volts, direct current. When the battery is charging, a pilot light glows above, and a toggle switch prevents danger of overcharge while the battery is in the charger.

They're Both Streamlined

KLEERLINE COUPLINGS

—like the long range bomber—are streamlined for speed, ruggedness and safe gliding. Few obstacles stand in the way of either; for instance, KLEERLINE Couplings have no outside lugs or protruding parts to catch in ladders and the hundred-and-one other in-the-way objects. Can't mar or wear out hose; they're easier to handle and faster to couple up, and tough enough to stand up under the roughest bangs.

Soon new hose will be available again. When you order yours, play safe — join the thousands of discriminating fire chiefs — specify KLEERLINE COUPLINGS.

★

Full information through your local dealer

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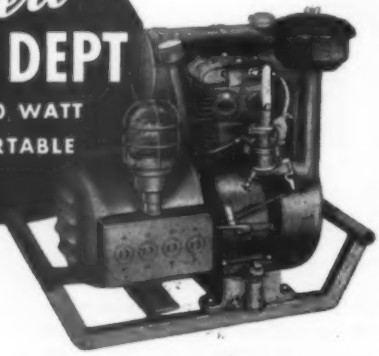
FASTER
STREAMLINED
BETTER
MODERN DESIGN

ANDERSON FIRE-FIGHTING
EQUIPMENT COMPANY, INC.
407 WEST 36th STREET NEW YORK 18, N. Y.

This emblem, which identifies one of the Nation's most complete lines of department supplies, is known and respected wherever fire fighting equipment is used. It is the mark of thoroughly sound design and extremely high quality.

ELKHART BRASS MANUFACTURING CO. Inc.
Elkhart, Indiana

New
FIRE DEPT
1500 WATT
PORTABLE



This new 1500-watt U. S. Portable meets your own specifications of what a fire department portable should be—because it is the result of our many years of experience building fire department units and becoming intimately familiar with your *exact* requirements.

- ★ 4-cycle air-cooled engine. 3.2 H.P.
- ★ Quick starting.
- ★ No fussing around mixing oil and gasoline.
- ★ Positive splash system lubrication.
- ★ Automatic voltage regulation under all loads. No adjusting necessary.
- ★ Equipped with carriers for easy portability.
- ★ Designed for *dependable* operation—a vital requirement for fire department service.
- ★ Larger and smaller sizes available.

Write for further information

UNITED STATES MOTORS CORP.
430 Nebraska Street Oshkosh, Wis.

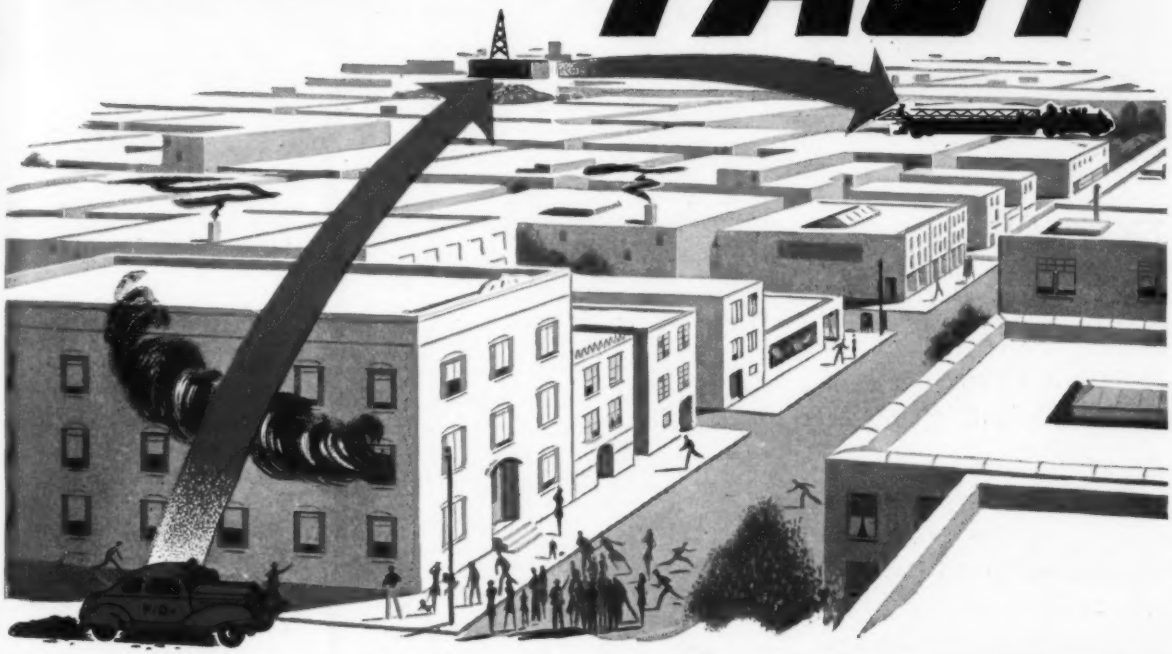
ARMY (E) NAVY

What's Burning

THE following list includes fires of $50,000 loss and over in the United States and Canada, for the month of February, 1945. These figures compiled from the telegraphic reports, are based on estimates made at the time and are subject to later investigation and consequent revision. Taken as a whole, however, they are an approximately correct view of the losses incurred. The figures represent losses in thousands of dollars.

Month Ending February 28, 1945	Losses in Thousands of Dollars
Portland, Ore.—Western Condenser Dairy Co damaged	50
Montgomery, Ala.—Merchants' Natl. Bank bldg.; Smokehouse, night spot, destroyed.	125
San Francisco, Cal.—Koffee Shop of Will King destroyed	50
Wilmington, Del.—LSM 428 boat, in outfitting dock destroyed	80
Columbus, Ind.—Office bldg. and mill of Dunlap and Co. destroyed	80
Brookville, Ind.—Standard Motor Parts Co. and Roberts Furniture Co. and Masonic lodge room destroyed	60
Maple Rapids, Mich.—Elementary and high school bldg. destroyed	50
Townsend, Mont.—Tomcheck & Gabisch Chevrolet Co. destroyed	50
Fort Worth, Tex.—Worth bldg., including Bond Stores, Inc., destroyed	350
New Haven, Conn.—Coal pocket bldg. of Seaboard Coal Company destroyed	60
Calais, Me.—Calais Academy destroyed	60
South Haven, Mich.—Center Theatre destroyed	60
Hightstown, N. J.—Main plant, used as grain storage house of Central Jersey Co-operative Assn., Inc., destroyed	225
North Tonawanda, N. Y.—Ascension Parochial School destroyed	60
Erie, Pa.—St. Ann's parochial school destroyed	60
Crosville, Tenn.—Service station and animal exhibit of A. M. Welch destroyed	50
Memphis, Tenn.—Auditorium of Naval Hospital housing ship service store, library and other recreation facilities destroyed; Naval Air Station's gunnery training bldg. two miles east of main station damaged	150
Rockwood, Tenn.—Roane Lumber Co. bldg. destroyed	80
Ft. Crook, Neb.—Bldg., Ft. Crook Army ordnance depot destroyed as well as eighteen half-track Army vehicles	125
Newark, N. J.—Warehouse of United Parcel Service destroyed	80
Brickeys, Ark.—Several business bldgs. of J. H. Kinard, Sr., destroyed	50
Chicago, Ill.—Fashion Club Stables with fifty boarded horses, destroyed	100
Chicago, Ill.—Automobile showroom and garage destroyed	80
Rushville, Ill.—Schuyler Hotel and adj. bldg. occupied by J. V. Knapp & Son Jewelry Store and J. D. Thompson Plumbing Co. damaged	100
Pittsfield, Me.—C. Earl Hodgkins & Sons yarn mill destroyed	80
Poplar Bluff, Mo.—Metz Lumber Co. bldg. destroyed	80
Morehead City, N. C.—Beaufort Consolidated School bldg. destroyed	125
Portland, Ore.—Upstairs Furniture Store destroyed	125
Central Falls, R. I.—Old City Hotel destroyed; Gosselin Bldg., Liquor Shoppe, variety store of E. T. Cormier and George E. Sabourin Moving Co. office, damaged	50
Chicago, Ill.—Apartment bldg. damaged	50
Indianapolis, Ind.—One bldg. of American Valve & Enamelling Corp. destroyed; another bldg. damaged	50
Northampton, Mass.—Mechanics Art Bldg. of Smith Agricultural School destroyed	170
Kalamazoo, Mich.—J. R. Jones Sons & Co. dept. store destroyed	250
Rumson, N. J.—Rumson Country Club destroyed	80
Walla Walla, Wash.—Twenty planes' hangars of Herman L. Martin Airport destroyed	170
Chicago, Ill.—Plant of Verling Steel Co. damaged	125
Pueblo, Colo.—Sewer pipe and sand refractories plant of Standard Fire Brick Co. destroyed	125

RADIO LOCATES FIRES FAST



and Boston quickly sends the right equipment

with Motorola F-M 2-WAY RADIO

Since the FCC and WPB have okayed radiotelephone for fire departments, you need no longer lack this essential equipment.

Boston reports its newly installed Motorola F-M 2-way Radiotelephone System so successful, officials declare: *"It is unthinkable to be without it."* Photo at left shows Battalion Chief, after arrival at fire scene, reporting to Boston Fire Alarm Headquarters, shown in the photograph below.

Originators and developers of the famous "Handie Talkie", the small, portable, 2-way radio used on every fighting front, Motorola Radio engineers are also famous for the F-M 2- and 3-way Motorola Radiotelephone Systems installed in 33 States and in over 1,000 communities throughout the United States, the Canal Zone and the Hawaiian Islands.

Write or wire today for complete details.

GALVIN MFG. CORPORATION • CHICAGO 51

F-M & A-M HOME RADIO • AUTO RADIO • AUTOMATIC PHONOGRAPHS • TELEVISION • F-M POLICE RADIO • MARINE • MILITARY RADIO

NOZZLE PRESSURATER

FOR PERMANENT INSTALLATION ON FIRE ENGINE PUMPERS

•

Indicates Nozzle Pressures

•

Installed on the Pumper

•

Enables Pump Operator to Maintain Desired Pressures On All Lines

•

Helps Protect Firemen From Accidents

•

Fool-Proof

•

Easily Read

•

When installed on each hose outlet of a fire engine, the No. 171 Nozzle Pressurater instantly gives the operator the accurate velocity pressure of the stream discharging from each nozzle. It does so irrespective of the length, size and condition of the hose or the elevation of the nozzle. It eliminates all guesswork and the necessity for any hydraulic calculations by the engine operator.

Write for Bulletin No. 171-1

BARTON

INSTRUMENT COMPANY

2306 E. 38th St., Los Angeles 11

Norton, Kans.—Masonic bldg. and Duckwall Stores Co. bldg. destroyed; Stapleton drug store bldg. damaged..... 80

Columbia, S. C.—Riverside Public Health Hospital, eight miles out, destroyed.... 125

Bay City, Tex.—Old Nichols Hotel bldg. and Vaughan office bldg. and contents damaged 50

LaCrosse, Wis.—Salzer Memorial Methodist Church destroyed..... 50

Baltimore, Md.—Irvine Dept. Store destroyed; adj. Lee's Dept. Store damaged 600

Kansas City, Mo.—Kissel-Skiles rent-a-car garage damaged 50

Star Lake, N. Y.—Grove Hotel, Grove tavern and Sol Kaplan dept. store destroyed 50

Perry, Ia.—Bldg. occupied by J. J. Newberry variety store, F. W. Woolworth, Art Fisher barber shop, ten offices and 20 apartments damaged..... 170

Fergus Falls, Minn.—A. B. Kilde auto body works and garage destroyed..... 50

Billings, Mont.—Motor freight company bldg. and 15 trucks destroyed..... 800

Buffalo, N. Y.—The Town Barn, night club, damaged 80

McKeesport, Pa.—Ruben business bldg. housing six stores, offices and apartments damaged 425

Minden, Tex.—Minden high school and auditorium destroyed 50

Abingdon, Va.—Farmers' Tobacco Warehouse and 300,000 pounds of tobacco destroyed 150

Fairmont, W. Va.—Fairmont Theatre, destroyed 425

Northfork, W. Va.—Northfork Hotel bldg. destroyed 125

Ottawa, Ont.—Building on Bank and Somerset Streets damaged 80

Beatrice, Neb.—One plant of Beatrice Steel Tank Mfg. Co. destroyed 425

Tacoma, Wash.—Sound Mattress & Belt Co. destroyed 50

Weston, Ont.—Plant of Canadian Gypsum Co. destroyed 350

Chicago, Ill.—Eager Chemical Products Co. damaged 80

Baltimore, Md.—Allied Wiping Cloth Co. damaged; also Oakum works of N. B. Woolford Co. damaged 275

Trenton, N. J.—Mansion of W. Paul Starkey, Jr., near Morrisville, destroyed 50

Los Angeles, Cal.—Bomb parts plant, operated by Union Die Casting Co., damaged 125

Mountain Lake Park, Md.—Southern Packing Co. cannery destroyed 80

Springfield, Ohio—Packing shed and heating plant at Frank H. Reese greenhouse destroyed 80

Detroit, Mich.—Two story bldg. housing Lasky Furniture Co. destroyed..... 150

Tacoma, Wash.—Business district four-story apt. house destroyed 60

Waterville, Me.—Jefferson Hotel destroyed 60

Chicoutime, Que.—Business and apt. block damaged 800

Hull, Que.—Business block damaged..... 80

St. Margarets, Que.—Commercial Centre damaged 125

Cairo, Ill.—Wharfhouse of terminal barge owned by Federal Barge Line Terminal, Ohio River destroyed..... 100

Birmingham, Ala.—Galax Theatre destroyed 90

Joliet, Ill.—Five warehouses in heart of industrial section housing roofing materials of Ruberoid Co., and wallpaper of United Wallpaper Co. destroyed..... 800

Columbia, Tenn.—Woldridge Drug Co. destroyed 50

Los Angeles, Cal.—Plant of Eljer California Co., plumbing equipment destroyed 170

Longueil, Que.—Four barrack bldgs., No. 4 Military Depot, destroyed..... 50

Passaic, N. J.—Half block of business houses occupied by K & D Restaurant; Specialty Upholstering Co.; Monroe Electrical Supplies Co.; Juvenile Furniture Co. damaged 50

Youngstown, Ohio—Ice & Fuel Co. destroyed 80

Philadelphia, Pa.—Paper lacquering plant of Schneider Bros. & Co. destroyed.... 170

New Cumberland, W. Va.—Assembly plant No. 2 of Hancock Mfg. Co. destroyed.. 125

Windsor, Ont.—Windsor Paper Co. bldgs. damaged 100

Indianapolis, Ind.—Peerless Furnace Co. and Peerless Foundry Co. damaged..... 200

Moline, Ill.—Four Moline shops and stores destroyed 60

Beverly, Mass.—Sons of Abraham Congregation synagogue and Community Center destroyed 50

Detroit, Mich.—Bldg. occupied by Kiepert grocery, Kroger Supermarket and Shettler Drug Co. branch store, damaged 50

Minneapolis, Minn.—Bethlehem Presbyterian Church destroyed..... 250

top fire with

DUGAS EXTINGUISHERS

Charged with PLUS-FIFTY DUGAS Dry Chemical

This is fast-acting protection that is YOUR safeguard against fire loss when you own a DUGAS EXTINGUISHER

READY FOR ACTION

Dugas units are mobile, easy to handle and simple to operate. They never freeze up in winter; never require periodic recharge . . . yet can be quickly recharged on the spot.

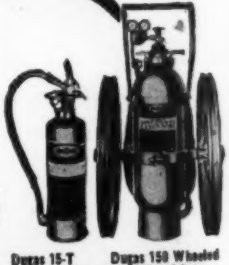
SAFE

The dry chemical rolls up a heat-shielding screen for the operator and at the same time chokes the fire . . . it is non-toxic, non-corrosive, non-abrasive, and is not an electrical conductor.

FOR EXTRA-HAZARDOUS FIRES

in flammable liquids, solids and gases, and in electrical equipment.

Approved by Underwriters' Laboratories, Factory Mutual Laboratories, and Governmental Agencies.



Dugas 15-T Hand Extinguisher

Dugas 150 Wheeled Extinguisher

duGas

ANSUL CHEMICAL COMPANY
MARINETTE, WISCONSIN
DUGAS DIVISION

NOW you can get a NEW Homelite Portable Pump

The new Model HR Homelite Self-priming Pumps are now coming off our production line.

However, only a few are being built . . . a limited quantity each month for essential civilian use. Your priority rating is your "ration coupon."

True to Homelite standards, these gasoline-engine-driven self-priming pumps are easily portable and extremely rugged. They have a large capacity . . . 28 foot suction lift . . . keep seepage at strainer level . . . and are non-clogging, foolproof and weatherproof. A new engine design gives increased power . . . with a reduction in weight.

These new Homelite Pumps can be furnished with fittings for 2″ or 3″ hose . . . and the two size fittings are interchangeable.

Write today for complete information and prices on these new Model HR Homelite Portable Pumps. Don't forget to give us your priority rating.

HOMELITE CORPORATION

PORT CHESTER, NEW YORK

PORTABLE PUMPS • GENERATORS • BLOWERS

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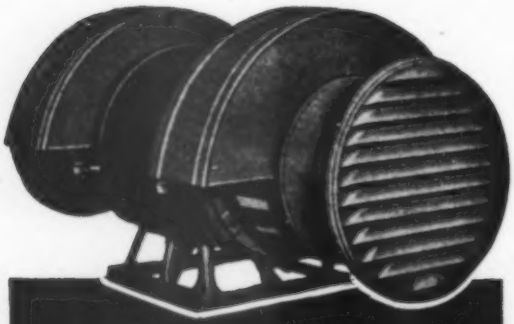

STERLING MODEL "M"

GENERAL ALARM SIREN

You Can Depend On It ALWAYS

An absolutely dependable, tried and proven siren for communities of all sizes. Loud, clear, simple to instal and no maintenance to bother with. Embodying the "know how" of the oldest and largest makers of siren signals in the fire field. Write for descriptive literature and list of towns using the model "M".

ALSO
manufacturers of a complete line of apparatus sirens.
Write for literature.

STERLING SIREN FIRE ALARM CO., Inc.
55 Allen Street Rochester, New York

FIRE FIGHTING TWINS

Volume and Pressure, the "Fighting Twins" of the fire field, fight best when they fight together.

Many a chief—while he likes to use the Pressure Twin as his first wave of attack—is mighty glad to call on the Volume Twin to back him up when the going gets tough.

Hale Fire Pumps are favorably known for their *wide range* of Volume and Pressure, as well as for high efficiency, balanced design and consistent dependability.

Write now for up-to-date information on Hale Fire Pumps . . . built in all standard capacities.

HALE
FIRE PUMP COMPANY
Conshohocken, Pa.

Classified Advertisements

WANTED

Fire Equipment Supply Companies, to sell Morning Pride Protected Rubber Firecoats, with Wing Sleeves, Chest Protector, Face Protecting Collar, Wool Wristlets, Double Shoulders, No Dirt Pockets. Also Firepants and Mitts. Write Morning Pride Mfg. Co., 1986 Home Ave., Dayton 7, Ohio.

CHIMNEY POWDER

No need to send men on the roof for chimney fires. Has-Mor Soot Destroyer not only puts the fire out, it continues to work until it cleans the chimney, making it unnecessary to go back to another chimney fire. Put up in handy packages. Agents wanted. Harry S. Morgan, 52 Broad St., Johnson City, N. Y.

FOR SALE
FIRE DEPARTMENT SUPPLIES

Portable Pumps, Floodlight Generators and systems. Double Jacket Fire Hose, Booster Hose, Coats, Helmets, Masks, Fog Nozzles, Sirens, complete line of Fire Department supplies. Box 30, c/o FIRE ENGINEERING, 24 West 40th Street, New York 18, N. Y.

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Agents wanted to set SOS Automatic Glass Ball Fire Extinguishers. Thousands sold. Good proposition. Write
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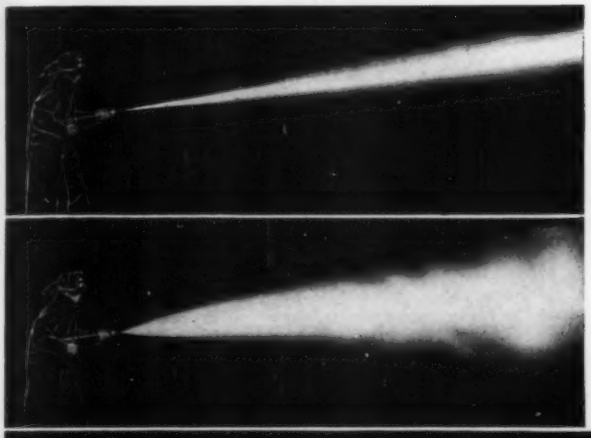
Morin Heights, Que.—Hotel Basler destroyed	50
Hialeah, Fla.—Martin Builders Supply Co. business section damaged	80
Casper, Wyo.—Wyoming Butane Co. garage destroyed	50
Sacramento, Cal.—Warehouse of Boone Transfer & Storage Co. destroyed	170
Peru, Ind.—High School Bldg., Amboy, 14 miles southeast, damaged	60
Chicago, Ill.—Plant of Indian Trailer Corp. damaged	60
New Orleans, La.—Club Forest destroyed.	425
Cleveland, Ohio—Army repair base hangar damaged	80
Longview, Tex.—Lebus Rotary Tool Works destroyed	170
Clearwater, B. C.—Planer mill of Swanson Lumber Co. damaged	125
Atlantic City, N. J.—Dungan, Fry & Spence Furniture Co. destroyed	150
Bristol, Va.—Bldg. occupied by grocery store, radio broadcasting station WOPI and a number of business offices damaged	80

The Cover Picture

When a Grumman Hellcat fighter was about to make a landing on the Carrier "Enterprise", it was waved off because of a bad approach. But the tail hook had caught a wire, a part of the equipment used by the Carrier in stopping landing planes, and crashed over the catwalk. The wing and belly gasoline tanks were ruptured, and took fire.

Lt. Walter Chewning, Jr., of Philadelphia, Pa., is seen climbing up the wing to rescue the pilot, Ensign Byron Johnson, of Potter, Neb. Despite the rapidly spreading fire and the possibility of machine guns going into action from the heat of the fire, Lt. Chewning completed the task without injury to the pilot or himself. He was awarded the Navy and Marine Corps Medal for this heroic action.



The Gun Is Important

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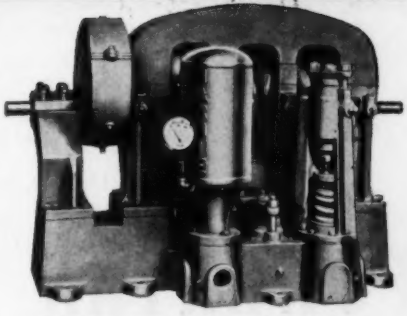

● Hardie Pumps are available in sizes delivering 35 and 60 gallons per minute at 600 to 800 P. S. I.

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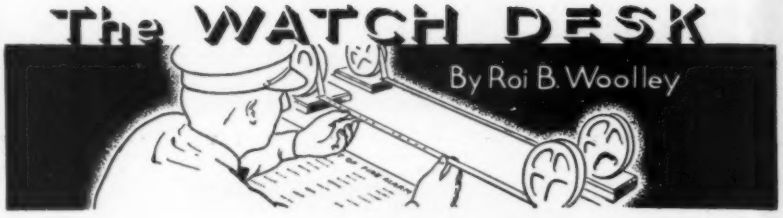


Our inquiring reporter overhauls the firemanic news of the day

Hot Mortgage!

In Philadelphia, Pa., the Brothers were called to extinguish a fire in a church. When they pulled up they were greeted by a sign: *"We welcome you to our mortgage burning."* It was no joke. Almost 1,000 parishoners were attending a dinner celebrating the burning of the church mortgage when a gas tank attached to a stove exploded.

* * *

Frogs in Its Throat!

Comes an item from an unknown in Dryden, N. Y., about the vamps of the town who were battling a recent fire in the Village Hall when they saw their stream of water dwindle to a trickle. Chagrined, non plussed and obfuscated, the hustled to investigate, specially since no kinks, no holes were found in the line.

After a hectic few minutes, they found the trouble—the intake pipe was clogged with frogs! Now don't ask us if they'd all croaked!

* * *

Hot Polish!

Mrs. Nettie Riley, Mamaroneck, N. Y., never thought there was anything dangerous about her nail polish. But a bottle of it exploded, lacerating the pupil of one eye and giving her multiple abrasions of the face, sending her to the hospital.

She told the police and firemen that after heating the bottle she placed it on a table where suddenly it burst, driving the glass particles into her face and eyes.

This is the second such case we've learned of. In the other, a bottle exploded in a trash-can in White Plains, N. Y., on a hot summer's day. Anything in the fire code about the hazards of nail polish?

* * *

The Month's Orchids

This month's orchids to Fire Chief Fred Newman, of Higginsville, Mo., for services beyond the call of duty, at a $50,000 fire that swept through a lumberyard in his community.

The spreading blaze ignited an adjoining house—which belonged to the Chief. The latter let it burn, however, in order to save other nearby homes, where he thought a fire stop more vital for his community than getting to work on his own property.

* * *

Why Firemen Get Gray Hairs

Somebody's always trying a dodge, or a gadget or a substitute for something, that gives firemen the jitters. Latest to come to our attention is William Shermanski, 33-year old Sterling Engine Co. employee of Buffalo, N. Y., who says gasoline rationing doesn't bother him because he runs his automobile on a mixture of water and acetylene.

William refuses to divulge the secret of his mixture, saying: *"It's dangerous if you don't understand it."* And he declares he can get 250 miles on a gasoline tank full of water and $2.75 worth of acetylene. He places the acetylene tank on the back seat with a line running to a home made carburetor!

Here's a job in the making for you, Chief Turbidy!

* * *

Radio Pays Its Way!

Contrib' W. G. sends us the item from the Cambridge Chronicle about a serious bus accident that occurred December 13 in Harvard Square that city. Seems that help was needed at once, and the quickest way to get it was via the Fire Department's Rescue Squad. This was summoned, and responded in time to perform valuable service.

What makes the account so interesting is the fact that the Truck was out on another call at the time of the accident and under normal conditions, if it had not been equipped with two-way radio, as it is, it probably would have meant a delay of from five to ten minutes getting the Squad to the scene where the need was most urgent.

Radio is a fine thing, and one-way wireless is better than none—but *"two-way"* seems to be about the answer to the maiden's prayer—especially if she's needing a rescue squad in a hurry, according to Cambridge firemen.

* * *

Cause and Effect

Bernard Swanson, assistant chief of the Jamestown, N. Y. Fire Department, filled out the following report card after firemen had removed a cat from a tree. *"Time—1:30 A. M.; Place—Foote and Newland Avenues; Type of Call—Cat in a tree. Cause—Dog."*

* * *

Floating Money

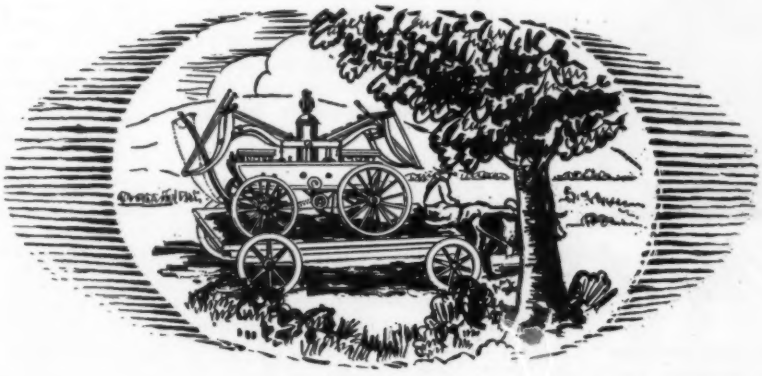
Knee deep in water, as they poured streams into the basement of a North side home, firemen of Chicago, Ill., saw the surface suddenly littered with folded money. From the whirlpool, fireman Frank Walthouse gathered a helmet-full of bills totalling $540. The owner of the house, now overseas in the Army, had hidden the money in the basement while on furlough.

* * *

Mousetrap Hunt Starts Fire

Someone once said if a man can make a better mousetrap, the world will make a beaten path to his door, or words to that effect. Well, Mrs. Mary J. Large, Troy, N. Y., according to Fire Chief Carl Smith of that city, was searching for the better mousetrap. To help her, she used a lighted candle. Likely place, thought she, was under the bed. You guessed it—the resulting fire caused $2,000 loss, including $50 in cash.

They Took the Pumper to Concord by Ox Cart



In 1824

Sam Eastman made a trip to Nashua by Ox Cart to pick up a hand pumper for the village of East Concord. In those days Nashua was the northern terminus of the railroad. The trip took days, but the vitally needed pumper finally arrived and went into service.

This devotion to fire department service has been apparent down through the years and—even today—makes itself more apparent than ever. The skillful men and women who are the backbone of this organization today have unceasingly and unstintingly devoted themselves to the service of their country, to hasten victory.

This same devotion to service will be apparent to those fire chiefs who appreciate the finest fire fighting products money will buy, when the boys come home to stay.

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For Practical Discussion of Current Fire Department and Fire Management Problems

MILITARY INSIGNIA ON FIRE DEPARTMENT UNIFORMS

THE discussion in this round table is a continuation of that which appeared in the February issue of FIRE ENGINEERING on the advisability of adding military insignia to fire department officers' uniforms in order to facilitate their identification by the public.

The generous response from our readers made it necessary to carry the discussion over to this issue.

Readers are invited to send in their comments on this subject or on next month's subject which appears in the box on the following page. Address communications to Round Table Editor, FIRE ENGINEERING, 24 West 40 Street, New York 18, N. Y.

Discussion of the Topic

Edward J. Cannon, Chief, Norfolk, Va.: We are at present using the regular badges, namely the trumpets, axes, etc., and in addition to this, we have an insignia on the left shoulder, two inches from top seam.

The chief, deputy chiefs and captains wear insignia with gold thread, and privates and engineers have a silver thread insignia. The winter uniform coat has this gold or silver thread on a blue field, while the summer uniform insignia for captains and deputy chiefs is on a white field, with engineers and privates using a light blue field.

We find that this provides a fairly good form of recognition, the public having become used to associating gold insignia with officers.

L. M. Funk, Chief, Dallas, Tex.: I can see no advantage to changing to or adding army insignia to fire department uniforms. I believe the traditional fire department insignia should be retained. I am proud to have worn this uniform of distinction for thirty-three years.

Edmund B. Lewis, Chief, Scranton, Pa.: I believe it is advisable to add to the shoulders of the dress uniform of fire chiefs some suitable insignia to designate their rank. I would also suggest that the matter be taken up by the International Association of Fire Chiefs for a solution to this question. The advantage would be that the ordinary layman could then distinguish the chief from the battalion chiefs or the assistant chiefs, as they now dress alike.

A. J. Mullaney, Chief Fire Marshal, Chicago, Ill.: Each officer and member of the Chicago Fire Department wears a coat badge indicative of his official position in the department. Firemen and fire engineers' badges carry an individual identifying number. Firemen's cap insignia shows this number and fire engineer's cap device indicates company rank.

The coat badges of lieutenants and captains indicate rank and company or other unit assignment. Cap insignia of these two grades includes one or two silver bugles or trumpets indicating rank, numerals indicating company or other assignment, and a color background indicating type of company, i. e., black for engine companies and blue for squad companies. Captains and lieutenants wear silver sleeve braid and silver buttons on uniform clothing.

HERE IS THE QUESTION

The significance of the trumpet and axe on rank insignia in the uniformed force of fire departments is not understood by the general public. In some departments a fire officer wears a badge bearing the title of his rank, but this practice is not universal. In doubt of a fire officer's rank, John Q. Public takes no chance and frequently addresses every fireman and officer as "Chief."

The war has made the public conscious of distinctions in the gradations of military rank. The average citizen now quickly recognizes the comparative authority of those wearing the gold bar, the silver bar, double silver bars, the gold and silver leaves, the eagle and the stars. These insignia, while original with the Army and the Marine Corps, are also used on occasion by Naval Officers when in fatigue or summer dress.

To make ranks in the fire service more easily identified, do you believe it advisable to add to the shoulders of fire officers' dress uniforms military insignia similar to the various ranks in the armed forces?

What advantages or disadvantages do you believe such a plan would entail?

THIS... is the first civilian announcement of the war-born *blended multi-protein foaming agent* for highspeed extinction of gasoline, oil and other serious fires. The U.S. Navy uses this effective multi-protein foam extensively for preparedness—and for quickly extinguishing fires on shipboard and at shore bases. MEARLFOAM-5 yields the live, lasting foam with the tough, elastic water-retaining film. When split-seconds count—you can rely on MEARLFOAM-5 to put fire out fast—keep fire out, *permanently!*

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The blue covered catalog is the latest published but write for our new price list, effective July 29, 1943. Only prices in the catalog on 14 karat gold items are still in effect. A special Fire Dept. circular is now in preparation. Watch for your copy.

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All chief officers wear coat badges indicating rank and field assignment. Cap insignia for field officers are crossed gold bugles, the number of bugles indicating rank, namely, two for battalion chiefs, three for division chiefs, four for deputy chiefs, and five for Chief of Department. All chief officers gold sleeve braid and gold buttons grouped in pairs on uniform clothing. The Chief wears buttons in groups of three.

We do not feel that any change from our well-established and traditional fire service insignia would result in any particular advantage, especially the use of shoulder insignia which may be looked upon as a mimicry of the military.

W. P. Payne, Chief, Spokane, Wash.: This department does have the same standard blue uniform for all ranks, but the officers wear gold braid stripes on their sleeves in place of the silver colored stripes worn by non-officers.

On fire fighting equipment, i. e., helmets and coats, the officers have gold colored numerals and the men silver numbers to indicate the station or company they are working with.

On our dress uniforms a coat and hat badge are worn with numbers corresponding to seniority among the firemen, but officers have gold plated coat badges and hat badges with crossed trumpets; five crossed trumpets for chief, four crossed trumpets for assistant chiefs, three for captains and two for lieutenants (we no longer have this rank). In the case of chiefs, a white cap is also worn. Captains wear a gold chin strap attached to their caps, but the ordinary fireman has a black leather chin strap, buttoned above the peak or bill of said cap.

Our inspectors now have a blue and gold shoulder insignia saying "fire prevention inspector."

It is not necessary to change uniforms upon promotion to a higher rank. We only remove the various silver insignia and replace with gold. I see no advantage in changing this system.

The Chief has three large gold stars on his sleeve besides an extra gold band.

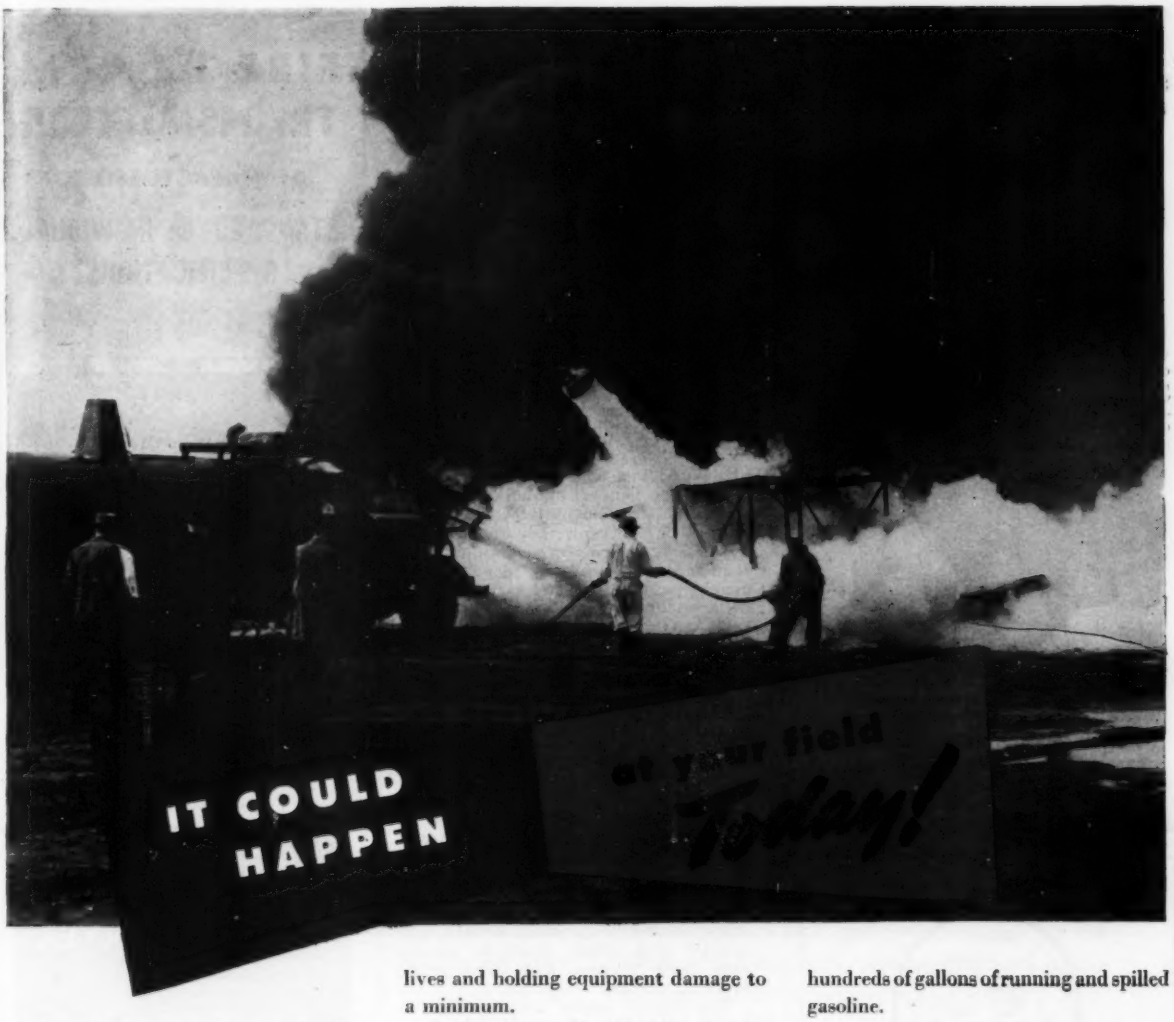
Charles L. Slade, Chief, Des Moines, Ia.: I can see no reason for adding so-called gold braid to uniforms. Those of our profession recognize our present insignia of the crossed trumpets. If the Public calls us all chiefs, "so what!" Besides it would add to the cost of an already too expensive uniform.

Terence Mulligan, Chief, Sacramento, Cal.: I am not in favor of changing the uniform of fire officers. I believe such a change would only add to the confusion.

C. C. Killian, Chief, Fort Worth, Tex.: I believe the use of military insignia would add to the general appearance of fire officers' uniforms and would have the advantage of easy identification.

A. C. DuRee, Chief, Long Beach, Cal.: I do believe the present standard fire service uniform, caps, insignia and turnout suits are as antiquated as horse-drawn apparatus.

I also believe the various positions in the fire service are not in conformance with duties required of this semi-



Engine quitting, or on fire . . . a leaking tank or ruptured gas line . . . landing gear jammed and a tricky belly landing to be attempted. They all mean trouble, and they can mean a disastrous crash fire . . . that, *in seconds*, becomes a roaring inferno like this test fire at the Cardox proving grounds.

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Airport authorities facing the problem of *adequate* fire protection for post-war operations should get these up-to-the-minute facts on Cardox Airport Fire Trucks NOW! Includes data on design, construction and operation; also typical performance records from the Cardox Case Book. Ask for Bulletin No. 1935

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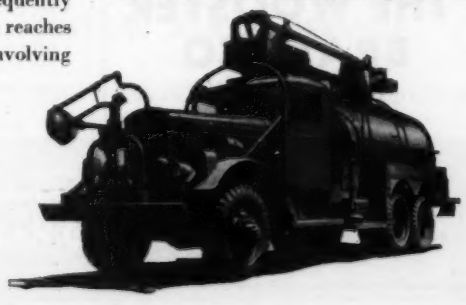

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military service. It is true ordinances, rules, state law, etc. would have to be changed to conform to new ranks or positions in the fire service, which, in my opinion, is badly needed to streamline and give dignity to this profession. It would be well worth the venture.

John H. Krusenklaus, Chief, Louisville, Ky.: I believe shoulder military insignia would be advisable inasmuch as no citizen in our city with the exception of those connected directly or indirectly with the department can detect a Louisville fireman's rank, unless he is personally acquainted with him or has been told that the rank is determined by the color and width of the stripe on his cap or coat sleeve.

This would clear up a lot of guess work on the part of the public and I believe the officers would be proud to wear them.

G. R. McAlpine, Chief, Oklahoma City, Okla.: The general public knows very little about the insignia worn by fire officers or the rank they represent.

I believe te fire service should, in all regularly organized fire departments, provide a uniform standard for that department, and line up the standards set. As you know, neatly uniformed men are the topic of discussion by the ordinary citizen. They all appreciate seeing a man in a neat uniform.

As to the insignia which would indicate the individuals rank as they are known to the Army, I believe this would have a wholesome effect and would serve to acquaint the general public with the different ranks.

The ranks should in my opinion be as follows: Chief of department, general; deputy chief, colonel; assistant chief, lieutenant colonel; district chief, major, battalion chief, captain, lieutenant, first lieutenant, motor pump operators, second lieutenants; drivers, sergeants, first grade firemen, private first class; second and third grade firemen, private.

The above ranks are familiar to nearly everyone, whereas the crossed bugles or axes are only familiar to the firemen and fire officers.

The Army insignia could be worn on the uniform in the same manner as it is worn in the military service. This, in my opinion, would be a step forward for the fire service.

H. R. Chase, Chief, Miami, Fla.: There are two reasons why I do not think it advisable to dress up our uniforms with the insignia of the armed forces. First, which would we use, the Army or Navy? If we used the Navy, many of those who have been in the armed services would still be confused for they would not know if you had two bars, whether you were a lieutenant, senior grade, in the Navy or a captain in the Army. Second, it will not be long after the war, when our boys return to civil life, that anything that reminds them of the life in the armed services will be unappreciated. I can see no reason for giving up or adding to our standard insignia. Calling a buck private "Chief," won't hurt my feelings.

Martin J. Hayden, Chief, Bridgeport, Conn.: I believe the bars are very easily identified and that they dress up a very plain uniform nicely.

I don't see any disadvantage to such a plan. The public always respects a

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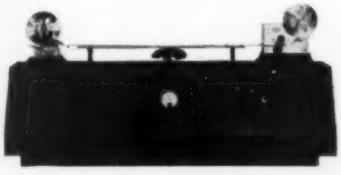

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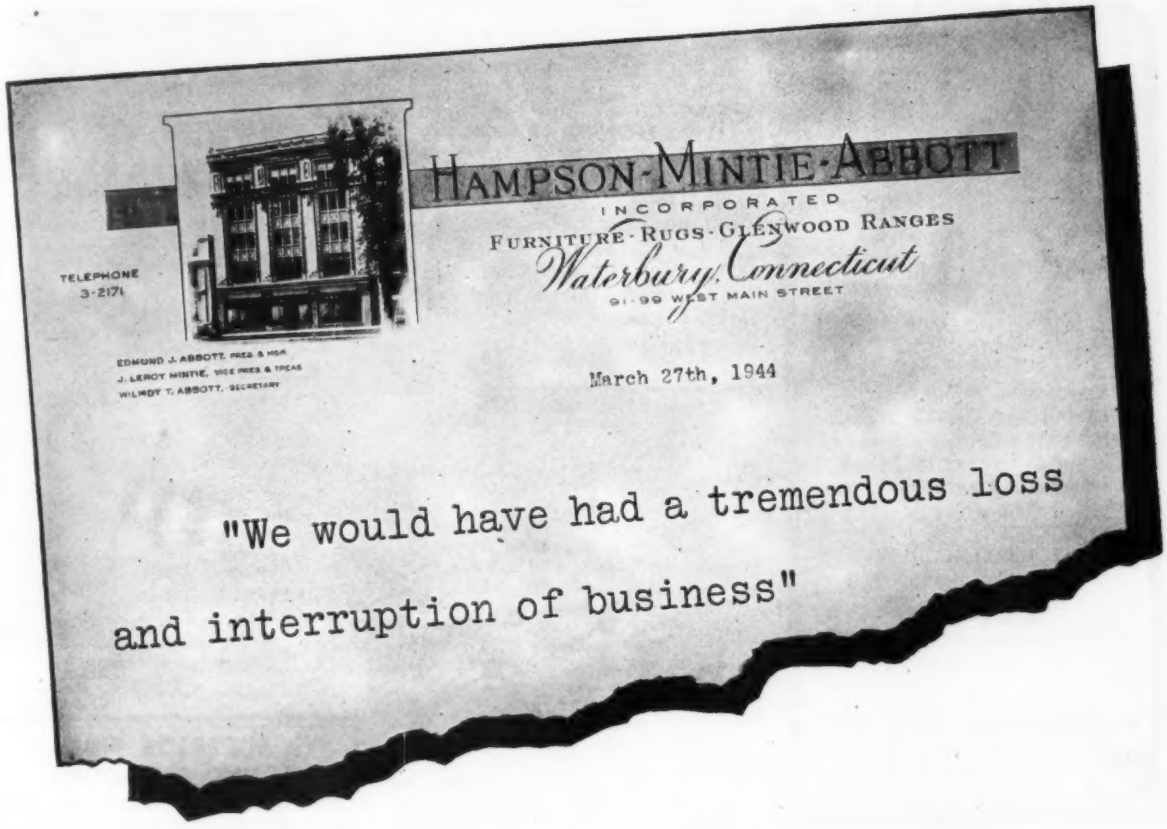

THE ABOVE STATEMENT is from a letter written to A.D.T. by Mr. E. J. Abbott, President of Hampson-Mintie-Abbott, Inc., a leading furniture store in Waterbury, Conn. It is typical of the expressions of thousands of other business men who have escaped the crippling after-effects of serious fires through their foresight in adopting A.D.T. Protection Service.

In this case an automatic alarm was received at 6:33 A.M. on a recent Sunday from a fire which started inside an elevator partition. That there was no one in the building to discover the fire and take proper action was of little importance because the A.D.T. Sprinkler Supervisory and Waterflow Alarm System immediately and automatically summoned the fire department. Admitted by the A.D.T. guard who responded to the alarm with a key to the premises, firemen quickly extinguished the flames and minimized water damage by shutting off the sprinkler system when the fire was out.

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HERE IS THE QUESTION FOR THE NEXT ISSUE

It is a practice of some fire departments to spread life nets when ladder rescues are being made.

1. Do you believe this to be a desirable practice?

2. If so, why?

3. What, in your opinion, might be arguments against this procedure, if any?

neat uniform, whether it is on a policeman, fireman or soldier.

James E. Granger, Chief, Cleveland, Ohio: I have recommended to the Director of Public Safety and the Uniform Committee to dispense with coat badges. I have suggested that officers wear the shoulder bars (gold and silver), gold and silver leaves, the eagle and the stars, together with a cap badge. The cap badge is only for the rank and file.

Patrick J. Keelan, Chief, Elizabeth, N. J.: A few years ago Elizabeth abolished the position of lieutenant and made them all captains. At that time we discarded the badge with the trumpets and axes and gave the officers a more up to date badge with the name "captain" and number of his company in the center. This distinguishes the officer. When we were using the old badges the men would be asked a number of times what the horns meant.

I agree that the shoulder strap or insignia would add color and dignity, which should be encouraged by both police and fire departments. I am for anything that will uplift the department.

Clarence W. Brown, Chief, Wichita, Kans.: At the present time we are not in favor of adding to the shoulders of fire officers' uniforms similar military insignia because of the fact that there so many military officers stationed in and near our city. If we were to use shoulder insignia, it might create a very embarrassing situation.

C. C. Jennings, Chief, Tulsa, Okla.: I prefer the present system, especially where the rank is printed on the badge. The military forces have so many that any more would be confusing to the public. Less display naturally makes for less confusion. Therefore, I prefer the lapel button and badge.

Paul F. Heinz, Chief, New Haven, Conn.: I can see no disadvantage to the adding of shoulder insignia on the uniforms of fire department officers. It will tend to streamline the uniforms and tie in with the present modernization of departments.

* * *

The following reply is in answer to a previous round table on the post-war benefits of military fire training.

Jack I. Nunn, Lt. (jg), USNR, Instructor, Crash Fire Rescue Training School, Jacksonville, Fla.: The hundreds of municipal firemen who are

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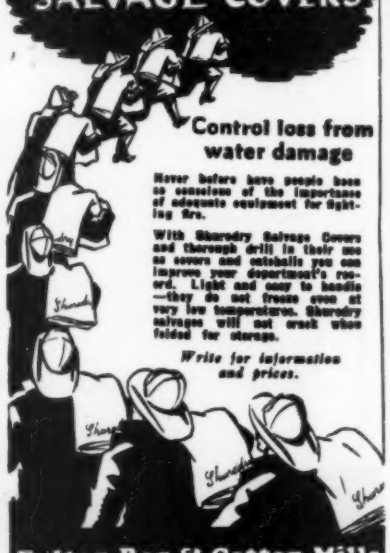

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used extensively by the Armed Forces.

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EXTINGUISH HOT FIRES WITHOUT USUAL WATER DAMAGE!

By atomizing plain water at extreme high pressure (600 pounds at the nozzle!), this revolutionary equipment produces a dense, smothering and cooling fog that quenches even oil and gasoline fires with miraculous speed...and with minimum water damage.

Because of this equipment's phenomenal success in extinguishing all types of fires, use of high pressure fog is now an accepted part of the most up-to-date fire fighting technique. A special type of FMC Fog Fire Fighter was developed by Food Machinery Corporation for Army and Navy use in combatting the most difficult fires. After the war, city and rural fire fighting units all over America will use FMC Fog Fire Fighters to do a better job of saving lives and property...one more way in which FMC's designing, engineering and manufacturing resourcefulness will serve the nation.

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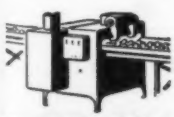

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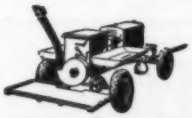

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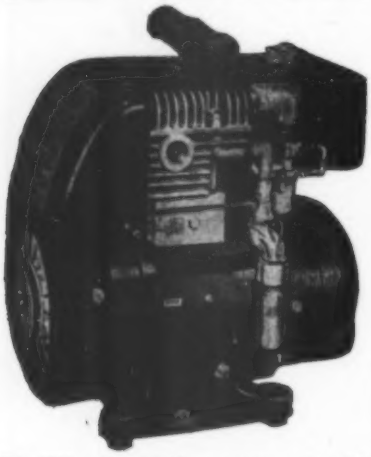

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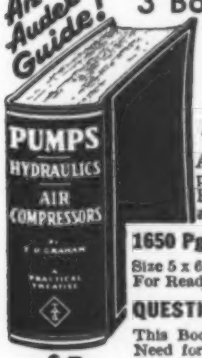

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instructors in Navy fire schools, plus the thousands they instruct, are rendering valuable service in fire protection and extinguishment ashore and afloat. As you know, many ships are afloat and many fliers are alive today due to the quick thinking and skill of these men. This alone should furnish some clue as to their value when they return to civilian life.

These men are kept up to date on all the latest equipment and fire fighting techniques by constant testing and experimental work conducted by all the services.

They have had concentrated and intensive training in fire extinguishment and rescue on ships and planes, using high pressure streams, fog, foam, carbon dioxide, etc., on A and B fires on a scale that would be out of the question for a municipal department. They also receive special training in the use of gas masks, forcible entry tools, protective clothing, rescue and first aid. In addition, the plane crash and rescue men (Navy airfield firemen) are trained in the use of the various types of fire fighting apparatus that are adapted to fighting airplane fires—the same equipment that will be used in municipal airfields that are bound to come after the boys return home.

Military discipline, the confinement in close quarters in large numbers, learning to live and work in harmony all help fit them for fire station routine.

Not only will fire departments reap the benefit of this training when their own men return, but the thousands of men the firemen trained in fire schools will return to industry and business more fire prevention conscious and will certainly cooperate with their home town fire departments when they start modernizing after "priority" is no longer a part of our daily vocabulary.

Editor's note: Lt. Nunn is a former member of the Dallas, Tex., Fire Department.

Volunteers Average an Alarm per Day

The volunteer fire department of Wythe district, Va., situated between Hampton and Newport News, recorded 392 alarms during 1944. Property lost as a result of fire was $69,534.50, it is revealed in the report of Chief Edward F. Ware.

Of the 392 alarms, 192 were silent. In the total calls field fires held the lead with 147 and ambulance runs accounted for 97 others. An average of 17 firemen per alarm was recorded. Monthly fire drills were held for day and night workers with 381 members receiving instruction. SANFORD D. DEWEY

British Guiana Has Worst Fire

About twenty buildings in Georgetown's business quarter (British Guiana) including two banks, post office, broadcasting station, a newspaper, and the Museum of National History were destroyed last month in the worst fire in British Guiana's history. The damage is estimated at over ten millions of dollars. The fire originated in the manufacturing department of a big drug store.

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For dependable, economical and efficient one-day battery charging service, this Full-Wave G-E Tungar should be your choice. It will give a fast or slow charging rate or a combination of both. Strongly built to withstand hard usage this G-E Tungar is extremely simple to operate. It's versatile too—at 2 to 6 amperes it will handle twenty-four 6-volt batteries, or twelve 12-volt batteries, or six 24-volt batteries. At 2 to 12 amperes it will handle twelve 6-volt batteries, or six 12-volt batteries, or three 24-volt batteries. For more information, write to Section A 359-58, Appliance and Merchandise Dept., General Electric Co., Bridgeport, Conn.

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Fire Hydrants

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Waterford, N. Y.

War Fare

By Roi B. Woolley

British Fire Losses

For the nine months ending September last, the monthly average estimated direct loss at normal outbreaks of fire in Great Britain and Ireland was slightly in excess of £1,000,000 ($4,860,000). Damage at enemy fires is not included in this return.

* * *

Maybe a Lesson Here!

"The success of our Armies on the Continent and growing confidence in an early victory resulted in a sharp increase in the number of fires in our Admiralty, Supply and Aircraft factories," said Mr. A. T. Lennox-Boyd (Parliamentary Secretary to the Ministry of Aircraft Production) in presenting trophies to the Supply Ministries' Industrial Fire Fighting Competitions at Manchester, according to "Fire Protection" for November.

"This shows that there is still urgent need to do all that is possible to prevent fires which, as we know by recent events in India, may from very small beginnings lead to quite catastrophic results," he continued.

"You people in the fire-fighting services have equipped yourselves by hard training, to act instantaneously and efficiently. The reason why in Bombay many lives and immense treasures were lost was the lack of leadership and training. Nobody knew what to do, where to do it, and when to do it. What may have appeared at times to be unnecessary training in the course of your experience does enable you when emergency arises to know what to do and where to do it."

Mr. Lennox-Boyd was referring to the fire and explosions in Bombay in April, 1944, when 900 persons were killed and about 2,000 injured. The report of the special committee set up by the Government of India to investigate the disaster attributed the fire to the discarding of a lighted cigarette end in a ship's hold.

Will it take our own increasing losses to convince us of the need for greater training and energy in our own fire prevention and fire protection?

* * *

Gasoline (Petrol) Blaze Heroes

For 21 hours, firemen of the NFS and U. S. seamen and soldiers fought a blazing stream of petrol, moving half a mile across the countryside at nearly 12 mph, and saved a Wessex village from which the inhabitants had fled. In order to keep fire streams operating firemen had to work under water sprays. The fuel seeped into the ground, formed pockets, which, when flame came into contact with them, exploded and hurled fire and smoke 70 feet in the air. The emergency was due to the fracturing of a large petrol tank buried in the slope of the hill, by enemy action.

Mr. Herbert Morrison, Home Secretary, commended officers and members of the Fire Force which fought the blaze. The official citation says that the firefighters were exposed to great personal danger throughout, and that those who were directing foam into the tank, from further up the hill, knew that

Barton Front Mounted

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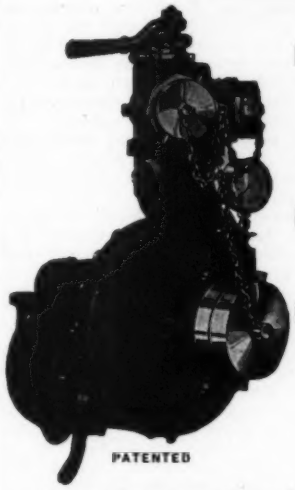
Barton-American Midship

FIRE APPARATUS
CENTRIFUGAL PUMPS



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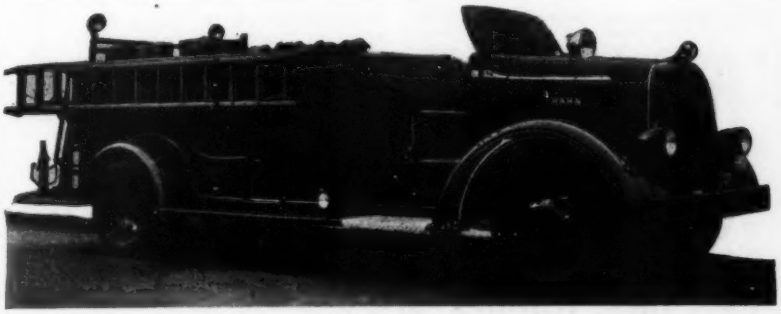

"HAHN" FIRE APPARATUS

SINCE 1907

FINEST IN THE WORLD ★ STREAMLINED ★ BALANCED CHASSIS ★ AMPLY POWERED ★ VERY EFFICIENT PUMPS WITH PLENTY IN RESERVE

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Our turnout suits are giving excellent satisfaction in most of the large fire departments throughout the U. S. and

THERE MUST BE A REASON WHY SO MANY FIREMEN INSIST ON JANESVILLE QUALITY

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the wrecked installation, and the ground beneath them, might collapse into the fire at any moment.

It was shortly after midnight that the 1,250,000 gallons tank was fractured and its contents ignited. The escaping petrol, fortunately, flowed into the 6 ft. wide bed of a small stream, and this enabled the villagers to reach places of safety.

The battle with the flames raged fiercely until an American volunteered to drive a bull-dozer through the flames and dam the stream. At the risk of his life, he succeeded. Other dams were then formed, and, although some were broken, they proved the means of extinguishing the escaping "spirit."

At the height of the fire, there were 220 NFS officers and men with about 30 pumps, and 500 U. S. seamen and soldiers on the range.

This account, from "Fire" of October, 1944, fails to state whether or not the "American" bull-dozer driver was suitably rewarded.

* * *

A Hero's Burial

Auxiliary fireman Lester L. Wolff, a member of the New York City Fire Department Emergency Auxiliary Corps, H. & L. Co. 154, in Queens Borough who died as a result of a fall from the ladder truck while responding to an alarm of fire from Signal Station 9349 at 7:40 P. M., January 13, 1945, was given the funeral service befitting a regular member of the Fire Department.

The services, which were held January 17, were attended by Fire Commissioner and Chief Patrick Walsh with his aide, Acting Deputy Chief John W. Heany; Deputy Fire Commissioners Ferdinand Butenschoen and Dr. Harry M. Archer; Assistant Chief of Department, in Command, John J. McCarthy and his aide, Battalion Chief Patrick G. Griffin. In command of the services was Acting Deputy Chief Richard J. Comiskey and his aide, Lieutenant Frank Soracco of the F.D.E.A.C. Division. The Color Guard was headed by Lieutenant Charles J. McKenna. The escort, in addition to the five of the color guard, comprised a Platoon of H. & L. Co. 154 consisting of a Captain, Lieutenant and twelve firemen. Many members of the Fire Department Emergency Auxiliary Corps, including the deceased's fellow auxiliaries, also attended.

* * *

Firemen Decorated

In recognition of great personal courage displayed at a fire in an ammunition dump, the King has made the following appointments to the Order of the British Empire (an empire decoration).

Officer, Regional Fire Chief William H. J. Benton, 4th Region; member, Assistant Commander Reginald Clarence Welch, 11th Fire Force; medalist Section Leader Cyril Crickmore, 11th Fire Force, based on Soithend-on-Sea.

Following a major explosion, Regional Fire Chief Benton and AFFC Welch, both former officers of the London Fire Brigade, made a reconnaisance from which valuable information was gained. They encountered minor explosions and the hazard of another major blast was always present.

The section-leader was in charge of the first appliance to arrive on the fireground. He displayed great energy

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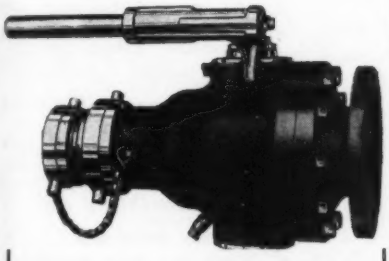

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- All pulsating stresses automatically compensated by flexible seat units
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Write for descriptive bulletin.

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and initiative, and when his appliances were put out of action by the major explosion, which shook him badly, he continued until relieved, when he collapsed and had to receive hospital treatment.

P. S. We can think of a number of American fire fighters deserving of national honors from this country—if there were such for the fire service.

* * *

OUR OVERSEAS CORRESPONDENT

The national Fire Service College at Brighton, England, claims to have one of the most comprehensive fire libraries in that country, if not the world, with a collection of well over three thousand books and magazines and, the latter including many years' issues of FIRE ENGINEERING, of course.

An interesting exhibition was recently held at the Bodleiam Library, Oxford, London, which portrayed the progress of fire engineering during the past 350 years. According to the "Collecting Head," "siege ladders of the 15th century and squirts and buckets of the 16th century are not entirely unlike our (Britain's) hook-ladders and stirrup pumps!"

Extreme wet weather last year is said to have caused an increase in the number of fires in open-cast coal dumps in Derbyshire, England. In the Ilkestone area three dumps, each containing about 10,000 tons, were reported to have burned for several months.

According to the British publication "Fire" the science of fire engineering owes much to French genius and experience—Canvas delivery hose, the hook ladder, the diffuser, the enclosed body for mobile fire appliances (apparatus); the technique for dealing with incendiary bombs and atomized water. . . ."

Fire Departments Urged to Modernize

A plea to keep the fire service abreast of the times and not let it sink to prewar levels was sounded by Fire Chief James Duncan, Alexandria, Va., in an address before the Tidewater Firemen's association of Virginia on Jan. 12 in Hampton.

Chief Duncan discussed various postwar measures to be considered by fire departments and urged that high standards be maintained through the purchase of new equipment, modern stations and fire alarm systems as well as the installation of more hydrants. Discussing the latter, he pointed out that the years following the war will see an increase in the use of airplanes which will bring about a greater fire hazard.

Election of officers was another highlight of the meeting, attended by delegates of 17 departments. Chief W. E. Sykes, Norfolk navy yard fire department, was named president to succeed E. C. Kaiser, Buckroe Beach. Others named were Assistant Chief N. A. Morse, South Norfolk, vice president; Wallace Hicks, Hampton, secretary; E. C. Kaiser, assistant secretary; R. E. Blanks, Craddock, treasurer; Chief T. L. Johnson, Fox Hill, chaplain; Ray Hancock, Newport News, sergeant-at-arms, and J. G. Crenshaw, Wythe district, historian.

SANFORD D. DEWEY

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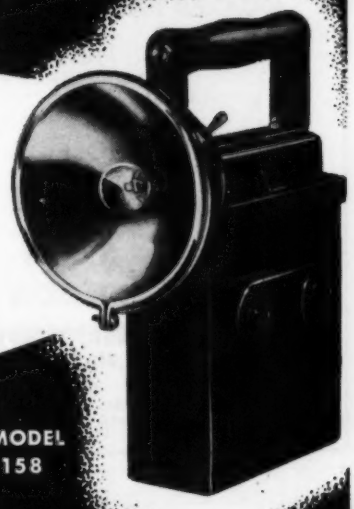
LOW PRICED
WHEAT
Rechargeable Spotlight



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- Light can be focused and directed as desired.
- Weighs only 92 ozs. complete.
- Simple to charge and water. No need to take lamp apart.
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2,500 FOOT BEAM
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1,000 HOURS OPERATION

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In action, each product has the highly developed fighting qualities that will make you thankful for insisting on and specifiying

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When using Gebauer's TANNIC SPRAY in the treatment of burns, the factors involving time-loss are eliminated. This preparation is a stable solution of tannic acid ready for immediate use. Packaged in a sturdy amber bottle having an automatic dispensing cap, which permits the projection of the solution in the form of a fine jet stream. Upon application the solvent evaporates rapidly, covering the burn with an evenly applied, dry and flexible film of tannic acid.

Gebauer's TANNIC SPRAY is a practical *first* first-aid treatment for first, second, and smal area third degree burns. Write for literature.

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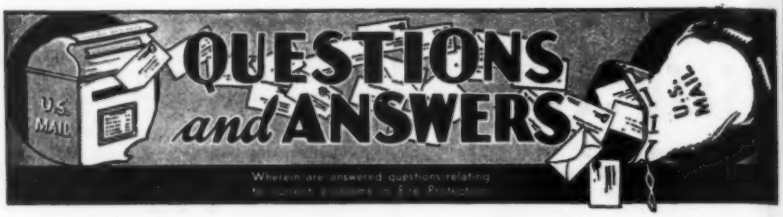

Wherein are answered questions relating to Current Problems in Fire Protection

Layout to a Turret Pipe

To the Editor:

You have been directed to place your 750-gallon pumper carrying 1,000 feet of 2½-inch hose at a hydrant and deliver your full rated capacity to a turret pipe. The distance requires a layout of 300 feet. What hose layout would you use and what pump pressure would be required? J. F. T.

Answer: In order to utilize the full capacity of the pumper, it wil be necessary to employ a 1¾-inch nozzle.

Three parallel 300-foot lines of hose will be required between the pumper and the turret pipe.

With this layout, the solution for nozzle pressure is as follows:

Assume engine pressure of 120 pounds.

K, for three parallel lines of 2½-inch hose and 1¾-inch tip, is 0.115.

L would be 300 ÷ 50, or 6.

Then nozzle pressure

= engine pressure ÷ (1.1 + KL)

= 120 ÷ (1.1 + .115 × 6)

= 120 ÷ 1.79, or 67 pounds nozzle pressure

A 1¾-inch nozzle at 67 pounds nozzle pressure will give 744 gallons per minute, which is approximately the full capacity of your pumper.

We believe this layout would be satisfactory, for a 1¾-inch nozzle delivers a satisfactory stream at 67 pounds per square inch nozzle pressure.

Some "True and False" Statements

To the Editor:

Will you answer the following "true and false" questions giving a short explanation where possible.

1. The greatest fire hazard of air conditioning systems is the combustible linings in the air ducts.
2. The chief fire hazard from the hot air system comes from the blower or intake.
3. The "Suredry" salvage cover is made of closely woven canvas and water-proofed with chemicals.
4. The "Suredry" salvage cover is made of closely woven canvas so closely woven together that it will hold water, and not treated with oils or other waterproofing compounds.
5. The sun shining on a pile of oily rags saturated with vegetable oil will induce spontaneous ignition.
6. If a nozzle ends in the form of a perfect cylinder, the taper of the nozzle will have no effect on the range of the stream.
7. All pumping engines are provided with two means of engaging and disengaging the clutch.
8. Fabric power transmission belts produce a greater fire hazard than leather belts.
9. Salt water is less efficient than plain water in extinguishing fire.
10. Air spaces in structural materials slow up transmission of heat by radiation.
11. Solid brickwork will conduct heat quite freely.
12. A cubic foot of dry sand will weigh more than a cubic foot of wet sand. T. H.

Answer: We would answer the above statement as follows:

1. False. Air conditioning systems are not permitted to have combustible linings. We believe the greatest fire hazard is in connection with the air filter in air conditioning systems.
2. False. It is our belief that location of hot air pipes too near woodwork is the chief fire hazard in connection with hot air systems.
3. True.
4. False.
5. True.
6. False. Although the effect on the range of streams of different shapes of nozzle bodies may be very minor, still such effect is present. Practically speaking, if the nozzle terminates in a cylinder of uniform diameter, and of proper length, a good fire stream can be secured from it no matter what the length of the shank. But as the statement prescribes "no effect," it must be classed as "false."
8. Belt manufacturing associations state that there is no appreciable difference in the fire hazards of leather and fabric belts if properly installed.
9. True. The extinguishing effect of a liquid depends upon the capacity for absorbing heat from the zone of combustion and of the materials which are burning. Salt solutions have lower specific heat than plain water. By specific heat is meant the ratio of the heat required to raise the temperature of a unit weight of a liquid one degree to the quantity of heat required to raise the temperature of the same weight of water one degree.

The following gives the specific heats of various salt solutions:

% Salt in Solution.....	5	10	15	20	25
Specific Heat...	.9306	.8969	.8606	.84090	.8073

From the above it will be noted that the amount of heat which a gallon of solution containing 5% salt will absorb in being raised one degree in temperature is .9306 of the amount of heat which one gallon of pure water will absorb in being raised one degree in temperature.

VALVES HYDRANTS

AND WATERWORKS ACCESSORIES

M & H products, including pipe line accessories, are well known for high quality of material and expert workmanship. They are made according to standard specifications and have been used for many years throughout the country. Write for Catalog No. 34.

M & H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

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"FLINT-FLEX"

The NEW plastic helmet, combining the utmost in strength, protection and comfort, with the minimum of weight; one-piece construction with embossed reinforcing ribs; insulates against heat and electricity; highly resistant to crushing or fracture; moderate in price; prompt deliveries. . . . Write for Catalog 310, describing this and the complete CAIRNS line of helmets, firemen's personal equipment, and department record books, forms, etc.

CAIRNS & BROTHER
444 LAFAYETTE ST. - NEW YORK 3

As a further example, where a salt solution contains 20% salt, the salt solution will absorb approximately 85% of what a similar quantity of plain water will absorb in being raised one degree in temperature. Thus the fresh water absorbs more heat than does salt water, and therefore may be considered a better extinguishing agent. However, as only a fraction of the cooling capabilities of water are utilized in controlling fires, in actual practice no difference is recognized.

10. This statement is not clear. Air spaces in structural materials do slow up the transmission of heat by conduction, but where surfaces are at a given temperature, radiation will be alike from surfaces of the same material, even if one is solid and the other contains air spaces. However, the supply of the heat which is to be radiated from the object will be greater where the structure is solid than where it contains air spaces.

11. This question cannot be answered either "false" or "true," for it is one which might be interpreted either way; it is a question of relative conductivity. The fact that brickwork is commonly used on chimneys in buildings would indicate that it is not a particularly good conductor of heat.

12. False. A cubic foot of wet sand weighs more.

January Fire Losses

Fire losses in the United States in January were estimated at $44,865,000, an increase of $6,293,000 or sixteen per cent over losses of $38,572,000 in January, 1944, according to estimates announced today by the National Board of Fire Underwriters. It is noteworthy that this figure is the largest for any January since 1929, when the National Board first recorded estimated fire losses. The board's estimates are based upon incurred losses reported by its member companies, plus an allowance for unreported and uninsured losses.

The January losses represented a decrease of $3,829,000 or 8 per cent from losses of $48,694,000 reported in December, 1944. Losses in the twelve months period from February 1, 1944 to January 31, 1945, amounted to $429,831,000.

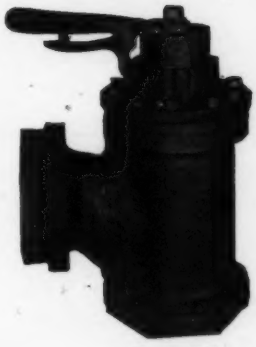
Baby Arrives—Thanks to F.D.

Alexandria, Virginia suffered a sudden and complete blackout at 8:58 P. M. on a February night when fire destroyed a generator in the main plant of the Virginia Electric Power Company. All work came to a halt in the city's naval torpedo plant and caused grave concern in the Alexandria Hospital's obstetrical room, where a baby was being delivered. There was also a loud wail from the 300 persons assembled in the Alexandria Elks' Club where Dr. Robert South Barrett, grand exalted ruler of all Elks, was a guest speaker.

Fire Chief James M. Duncan and his Department came to the rescue; rushed a special line into the hospital, secured an emergency generator for the worried Elks and with the aid of the company's emergency repair crews of the power company, had the power on again for the city's 63,000 at 9:45 P. M.

Incidentally, we are told the "blackout baby" weighed nine pounds 13 ounces—which ought to be some sort of a record!

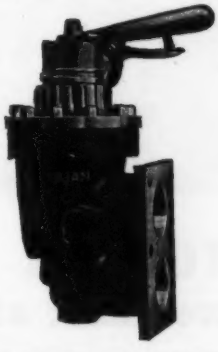
ROSS RELIEF VALVES



1" to 2½" female threads

MODERN PUMPERS

demand these rugged, modern relief valves. Their simplicity and responsive dependability make them a must. Made in sizes from 1 inch to 2½ inches with capacities up to 1600 g.p.m. and pressures up to 750 lbs. Write for descriptive literature describing the complete line of



TRAILER PUMPERS

Trailer pumpers require valves made especially for this type of work, such a valve is the ROSS Trailer Pump Relief Valve. Made in sizes from 1 inch to 2½ inches with pressure adjustments from 10 lbs. to 750 lbs. and capacities from 0 to 500 g.p.m. at 120 lbs. pressure.

ROSS VALVE MFG. CO
INCORPORATED
P.O. BOX 595, TROY, N.Y.

MODERN FIRE FIGHTING
forerunner of mechanized warfare

Has it ever occurred to you that Fire Departments here in the U. S. A. originated the idea of mechanized warfare?

Fire Chiefs early saw the advantage of speed...getting to the scene of action faster... increasing personal efficiency through the use of pumpers...stepped-up hose pressures...aerial ladders... turret nozzles.

Throughout this mechanization era, Eureka Fire Hose has been steadily improved in design and construction. Since its introduction in 1875, Eureka has continually held recognition as the most trustworthy fire hose obtainable.

"For greater protection to life and property"

EUREKA FIRE HOSE

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MARCH, 1945

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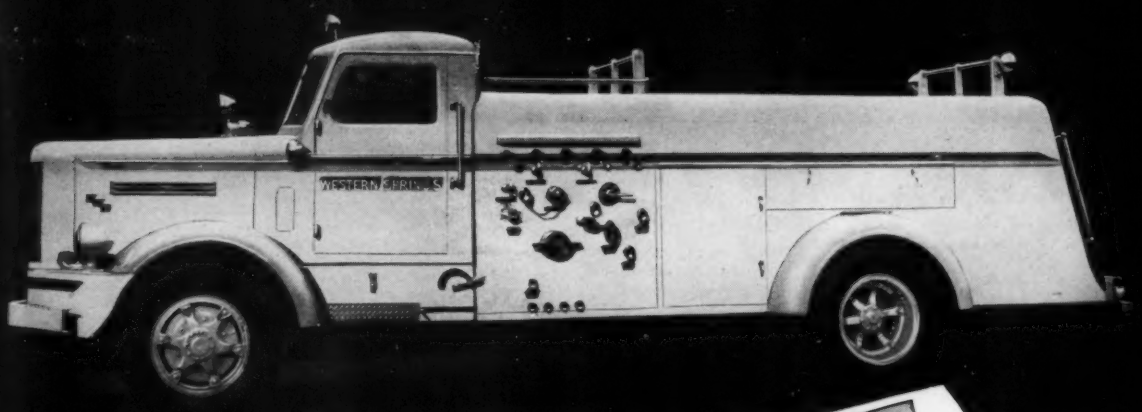


WHY YOU WILL LIKE FWDs

FWDs Go Where Other Vehicles Fail

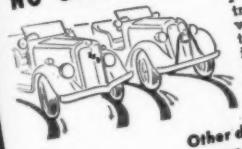
FWD Fire Apparatus is engineered to cut running time without jeopardizing equipment, firefighters or the public. With proper weight distribution and driving power on all four wheels, safe traction is assured...FWDs are always "sure-footed", practically non-skid, in any weather. No mud or snow-blocked roads or steep grades handicap FWDs...they go *through* where others stall! Hundreds of FWDs in successful fire-fighting service. All types and sizes.

WRITE FOR LITERATURE

THE FOUR WHEEL DRIVE AUTO COMPANY: Clintonville, Wis.

Canadian Factory: Kitchener, Ontario

NO SKID, NO SLIP, NO SLUE!

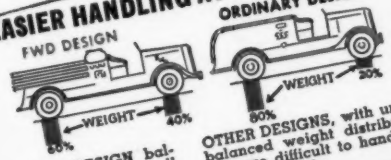


Powered steering traction holds front wheels to direction of turns, thus minimizing skid-danger. Skidding tests conducted on ice show 50% less skidding.

FWD... non-skid.

Other designs more liable to skid.

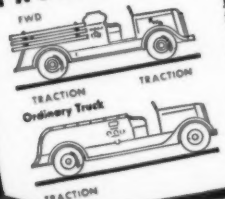
EASIER HANDLING AT HIGH SPEEDS



FWD DESIGN balances weight on all four wheels . . . assures easy handling at any speed.

OTHER DESIGNS, with unbalanced weight distribution are difficult to handle at high speeds.

FASTER GET-AWAY



FWD power on all four wheels gets a four-way grip on any road and assures faster get-away.

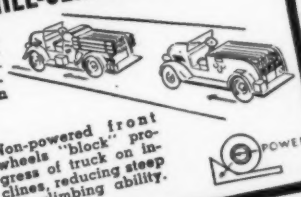
Other designs, lacking drive on front wheels, lose time in get-away.

QUICK, POSITIVE, SAFE EMERGENCY STOPS

FWDs have two separate and independent 4-wheel braking systems, with brake drums on each wheel. Combined with properly balanced weight distribution, these provide the most effective braking possible.

GREATER HILL-CLIMBING ABILITY

FWD's front wheel pulling power increases hill-climbing ability. Reserve traction in all 4 wheels.



Non-powered front wheels "block" progress of truck on inclines, reducing steep hill-climbing ability.

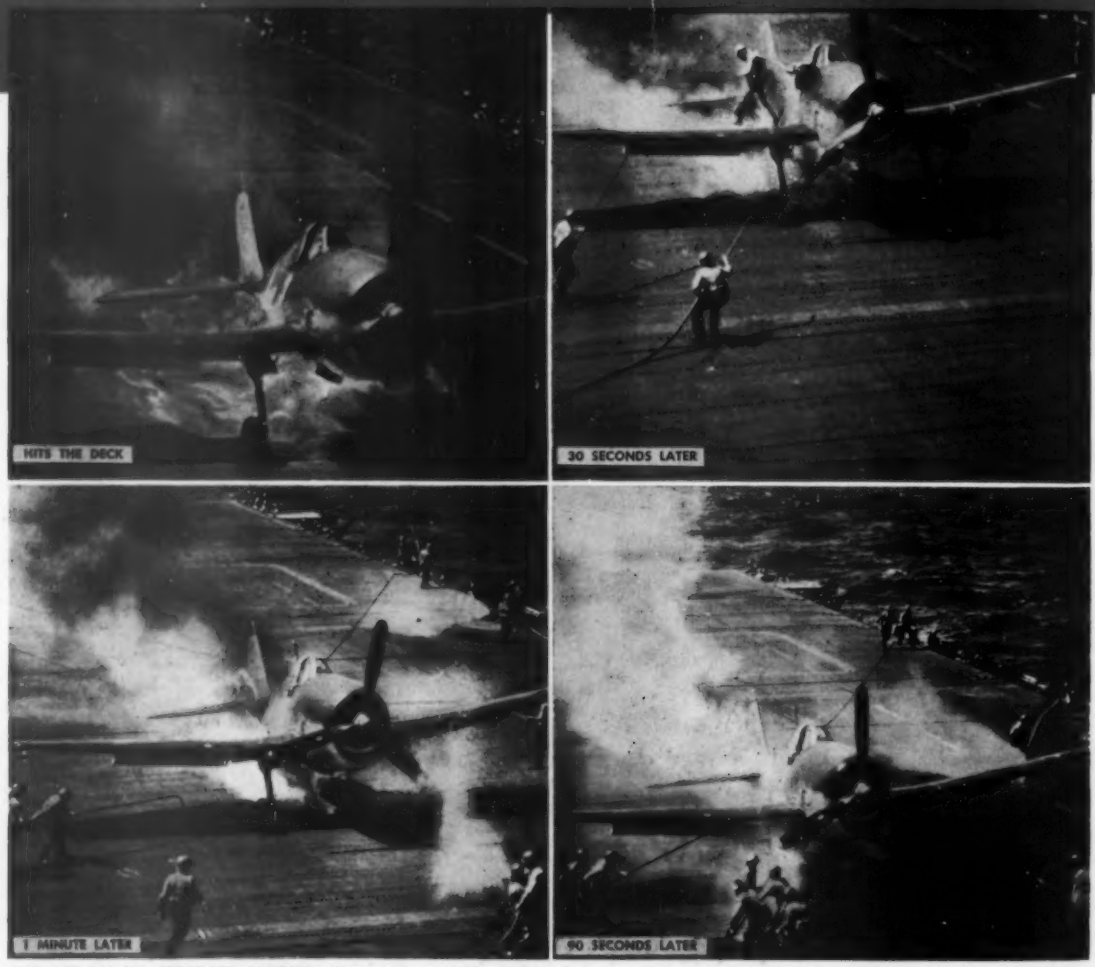
FWD

FOUR-WHEEL-DRIVE *Fire Apparatus*

GETS TO FIRES FASTER and SAFER!

FOGNOZL . . .

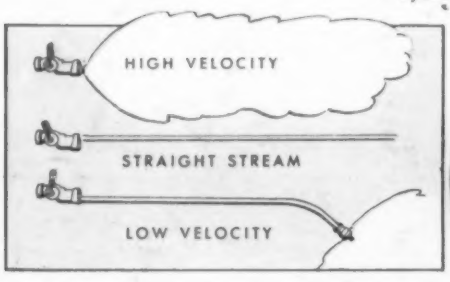
The PRODUCT *behind the news*

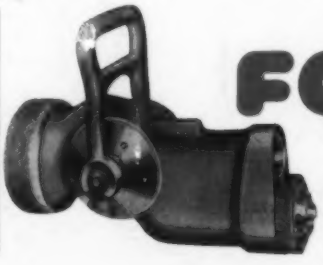


ACTION ON AN AIRCRAFT CARRIER. *One minute and 30 seconds after a burning Hellcat lands aboard its carrier, the swift action of FOGNOZL* crews completely extinguishes the fire. This is typical of the speed with which all types of fire are being controlled by the almost miraculous action of patented FOGNOZLS*.*
(Official U. S. Navy Photos)

The Magic of Broken Water

To know why Fognozl* performs the near miracles of fire extinguishment described in the national press, one must understand that its action is based on scientific principles. The scientifically designed Fognozl* produces and projects "broken water" as a real fog of very small, uniform particle size. Research carried on over a period of more than 20 years by Fognozzle Company has proved that this true fog—"the magic agent of fire extinguishment"—can only be produced by impinging of water streams—the patented principle used in the Fognozl.*





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